



Supplemental Service Manual



Manufacturer:

Alcon Laboratories, Inc.
6201 South Freeway
Fort Worth, Texas 76134-2099
U.S.A.

Produced By:

Alcon Laboratories, Inc.
15800 Alton Parkway
Irvine, California 92618-3818
U.S.A.

Telephone: 949/753-1393

800/832-7827

FAX: 949/505-6614



Alcon Laboratories (UK) Ltd.
Frimley Business Park
Frimley, Camberley
Surrey, GU16 7SR, United Kingdom



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***Centurion** Vision System Supplemental Service Manual**

906-2150-002

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SECTION ONE - GENERAL INFORMATION

1. NOTICE OF CONFIDENTIALITY

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Irvine, California 92618-3818
(800) 832-7827, or (949) 753-1393

2. INTRODUCTION

- 2.1 Purpose - The purpose of this procedure is to provide additional instructions not included in the Service Manual, which are considered proprietary, but are required to service the *Centurion** Vision System.
- 2.2 Scope - The scope of this document applies to the *Centurion** Vision System and the *Centurion** Silver System.
- 2.3 Overview - The procedures that follow are proprietary addendums that may/may not require the use of *Centurion** operating system and application software, but will require completion of the STP after they are performed.

3. SAFETY PRECAUTIONS

- 3.1 Warnings and Cautions - Pay close attention to warnings and cautions in this manual. Warnings are written to protect individuals from bodily injury. Cautions are written to protect the instrument from damage.
- 3.2 Universal Precautions - Universal precautions shall be observed by all people who come in contact with the instrument and/or accessories to help prevent their exposure to blood-borne pathogens and/or other potentially infectious materials. In any circumstance, wherein the exact status of blood or body fluids/tissues encountered are unknown, it shall be uniformly considered potentially infectious and handled accordingly. This is in accordance with OSHA guidelines.

4. REFERENCE DOCUMENTS

- 4.1 917-2150-002 Service Test Procedure

5. DEFINITIONS

- GUI - Graphical User Interface displayed on the touchscreen.
- CPLD - Complex Programmable Logic Device
- MFIO - Multi-Function Input/Output
- SPI - Serial Peripheral Interface
- LVDS - Low Voltage Differential Signaling
- CAN - Controller Area Network
- SSD - Solid State Drive
- SXGA - Super Extended Graphics Array
- PWM - Pulse Width Modulation
- SATA - Serial Advanced Technology Attachment

6. INSTALLATION

6.1 Unpack Console

- 6.1.1 Cut the packing straps and then remove the top cover. Refer to [Figure 1-1](#) for packing configuration.
- 6.1.2 Remove all the accessories and set aside; (operator's manual, dust cover, display cover, remote control, IV pole hanger, cassette pack and reconstitution BSS bag rack)
- 6.1.3 Remove the bottom assembly of foam packing material.
- 6.1.4 Remove the outer cardboard piece.
- 6.1.5 With the console remaining strapped to the pallet, tilt it up with caster end down. It is recommended that you request assistance of someone during this step.
- 6.1.6 Loosen the Velcro strap holding the console to the pallet
- 6.1.7 Carefully lift and slide the console off the bottom foam packing material.
- 6.1.8 Lift the top foam material off the console and remove the plastic shipping cover.
- 6.1.9 Loosen and remove the Velcro strap that is securing the display.
- 6.1.10 Pivot the display up and remove the protective foam packing material and plastic sheet taped to the display.
- 6.1.11 Pull the red plastic shipping cap from the top of the IV pole.
- 6.1.12 Rotate the work surface to gain access to the Active Irrigation drawer, open the drawer and remove all the foam packing material.

6.2 Unpack Footswitch

- 6.2.1 Open the box containing the footswitch and then remove the top packing foam.
- 6.2.2 Remove the footswitch from the box and plastic shipping bag.
- 6.2.3 Pull the packing foam out from around the footswitch treadle.

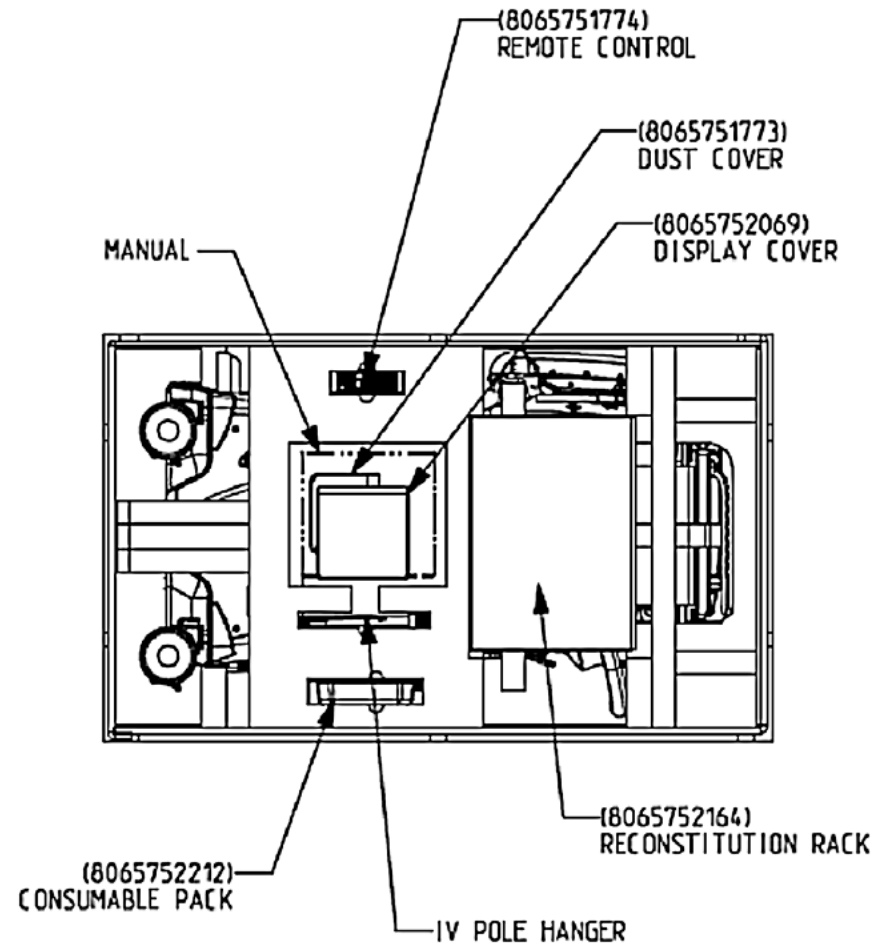


Figure 1-1 Packing Configuration

6.3 Console Setup

- 6.3.1 Install the IV pole's bottle hanger.
- 6.3.2 Install the batteries into the remote control.
- 6.3.3 Hang the footswitch on the footswitch hanger hooks, located on back of console.
- 6.3.4 Rotate the display to the operational position. Deploy the tray arm assembly to its working position.

6.4 System Settings

- 6.4.1 Plug console into power outlet and turn on.
- 6.4.2 Navigate to *System Settings/General* tab and set the Date & Time (see [Figure 1-2](#)).



Figure 1-2 System Settings - General Tab for Setting Date and Time (software version 2.03 shown)

- 6.4.3 Insert a System Name. This is optional and can be done by the user. This name will be displayed in the upper right section of the Backup/Restore dialog screen.

Accessing the Service Screen

For systems below software version 3.0 - Navigate to the *About* screen, then enter the Service screen by pressing on the right and then the left side of the About header. The Service Screen will open.

For systems with software version 3.0 - Navigate to the *About* screen, then enter the Service screen by pressing on the left and then the right side of the About header. Next, press Alcon Technical Services. Enter "6412" in the dialog and select green check mark. The Service Screen will open.

6.5 Wireless and Wi-Fi Setup

- 6.5.1 *For systems with software below version 3.0* - Select the *System Setting/Wireless* tab, then set the wireless footswitch and WiFi settings as necessary. For wireless footswitch, select Japan for Footswitch Region. (see [Figure 1-3](#)).



Figure 1-3 System Settings - Wireless Tab for Footswitch Setup (software version 2.03 shown)

- 6.5.2 For systems with software version 3.0 - Go to the *Service Screen* and select the Configuration tab, then the Region tab. Setup the Footswitch Network and Wi-Fi Network Region as necessary (see [Figure 1-4](#)).



Figure 1-4 Service Screen for Software Version 3.0 - Configuration/Region Tab

6.6 Localization Settings

- 6.6.1 In the *Service Screen*, select the Localization tab and select *Change Contact*. Enter that country's Technical Services office phone number (see [Figure 1-5](#)).
- 6.6.2 Select country of install.
- 6.6.3 Language installation - Refer to the Language Pack Installation Procedure in the Maintenance section of this document.
- 6.6.4 VideOverlay configuration - Refer to the [VideOverlay Configuration Procedure](#) in the Maintenance section of this document.
- 6.7 Check for Outstanding Service Flash
- 6.7.1 Go to the Service-Flash Online Filing Application (SOFA) and determine if there is an outstanding Service Flash that must be performed on the system.
- 6.7.2 Complete the Service Flash as required or continue to the next step.

6.8 Complete the Service Test Procedure (STP).



Figure 1-5 Service Screen - Localization Tab for Entering Local Contact Information

7. PACKING THE SYSTEM FOR TRANSIT

To avoid damage during transport, careful preparation of the instrument is required prior to placing it in a vehicle. The display screen and instrument tray must be properly secured using straps and cushion material.

Additionally, the footswitch must be placed in "shipping" mode to avoid draining the battery. The constant movement incurred during transit will cause the footswitch to "wake up" thereby using battery power.

- 7.1 Using the photo shown in [Figure 1-6](#) as an example, secure the display screen and instrument tray as necessary in preparation for transit. **NOTE: Materials from the original shipping container are used in this example.**

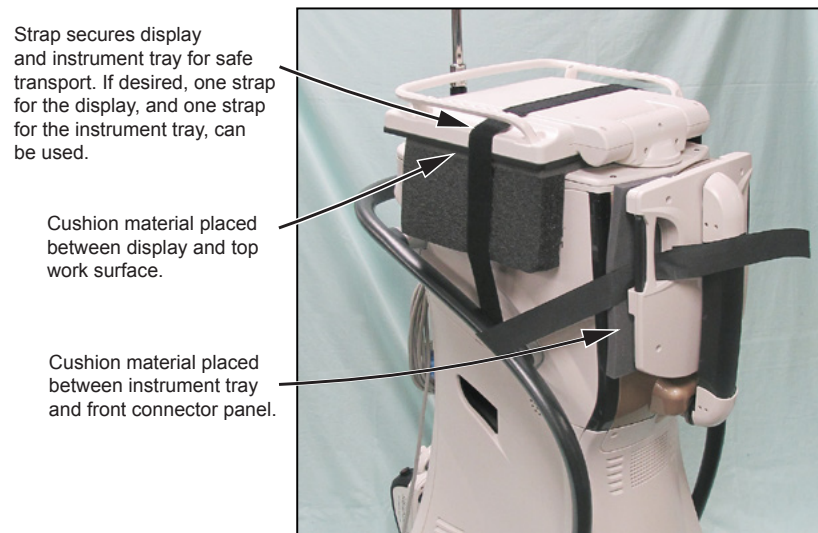


Figure 1-6 Example of Properly Packing the System for Transit

- 7.2 Set the footswitch to "shipping" mode by pressing and holding (for at least two seconds) the switch shown in [Figure 1-7](#) with a cotton swab or other instrument that can reach the recessed switch without damaging the rubber covering.

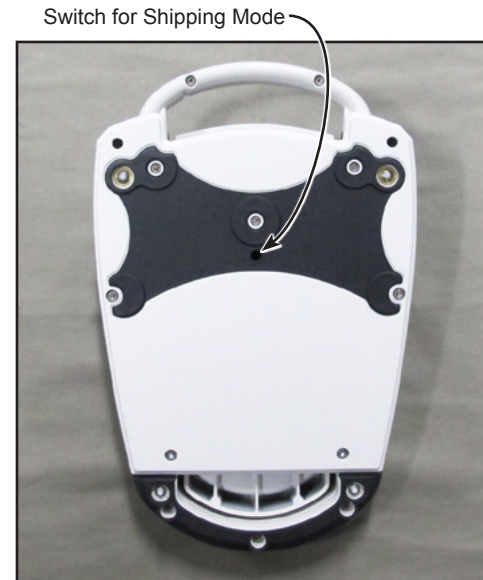


Figure 1-7 Setting the Footswitch to Shipping Mode

- 7.3 Verify the footswitch is in shipping mode by pressing the treadle down and checking the footswitch LED response. The LED's should not illuminate if the footswitch is in shipping mode.

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SECTION TWO - THEORY OF OPERATION

1. SYSTEM OVERVIEW

- 1.1 The *Centurion** Vision System is a software-driven electromechanical device designed to delivery state-of-the-art performance for all aspects of cataract lens extraction. The block diagram shown in *Figure 2-1* shows a simplified view of the system. A general description of the diagram follows.

1.2 POWER

- 1.2.1 The system receives AC power from the facility through the 10 A/250 V Power Entry Switch A21. This fused switch delivers AC power to the 750 W Power Supply A8 which provides 24 VDC and 12 VDC to the Multifunction Input/Output (MFIO) PCBA. The MFIO manages and distributes the console 24 VDC bus.

- 1.2.2 In the event of AC or power supply failure, two 12 V lead acid batteries in series provide backup (less than one hour). In addition, the batteries will charge the footswitch battery if the AC power is off.

1.3 SYSTEM COMMUNICATIONS

- 1.3.1 The main system communication network is composed of a pair of FlexRay** channels that are routed throughout the system in a linear topology fashion with the bus termination circuitry residing on the end nodes of the network (the Host and US subsystems).

1.4 MULTIFUNCTION INPUT/OUTPUT (MFIO)

- 1.4.1 The MFIO PCBA functions as a system backplane, distributes the main 24 VDC supply and FlexRay** communication buses, as well as providing the electronics and software needed to control or interface with a number of modules shown in *Figure 2-1* and listed below:

- AC/DC power supply
- System backup battery
- IV Pole
- Pneumatics air source

- Patient Eye Level (PEL) LED's
- Wireless footswitch
- Wired footswitches
- Wireless footswitch contactless charger
- Audio
- System fans
- Standby switch
- Upper Backplane panel

1.5 HOST

- 1.5.1 The Host assembly is comprised of an embedded computer board, media devices (e.g. USB), system communication controllers and input-output ports. The Host is responsible for displaying the Graphic User Interface and communication of Surgical Step sequence parameters to the subsystems via the FlexRay** communication bus.

1.6 ULTRASONICS

- 1.6.1 The Ultrasonics Assembly provides the phacoemulsification handpieces with power for longitudinal and/or torsional (oscillatory) motion of the tip. The amount of ultrasonic motion and type of motion (Torsional vs. Longitudinal) is configured by the surgeon on the touchscreen/GUI, communicated by the Host to the Ultrasonic subsystem and then controlled by the surgeon through the footswitch. During ultrasonic power delivery, the Fluidics Aspiration and Irrigation subsystems provide simultaneous irrigation and aspiration to maintain the anterior chamber and remove cataractous lens material.

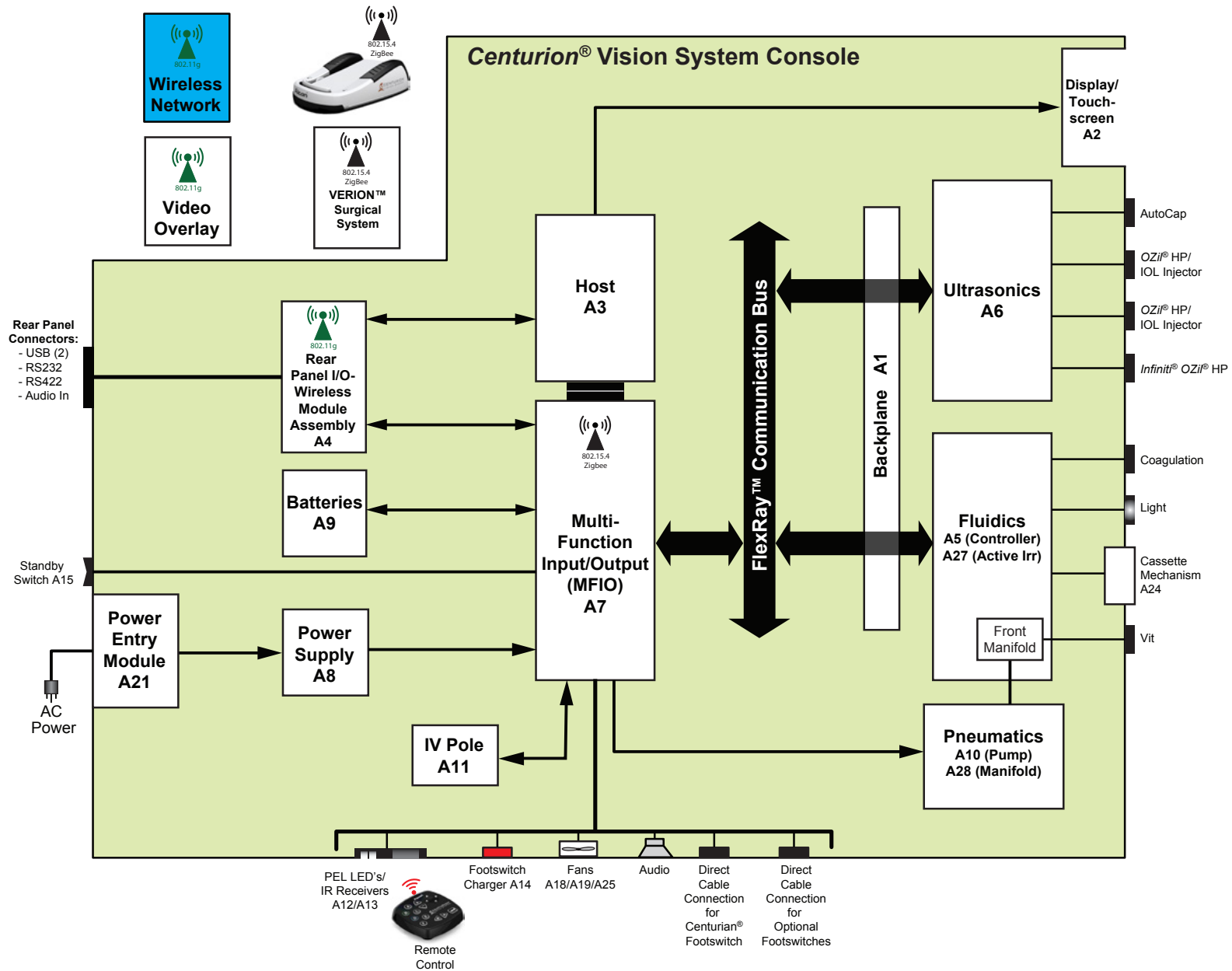


Figure 2-1 System Block Diagram

- 1.6.2 AutoSert® IOL Injector Handpiece - The Ultrasonic subsystem electrically drives the IOL Injector Handpiece motor as well as supporting the simultaneous preparation of two ultrasonic handpieces. The motorized IOL handpiece functions, including injection speed and dwell, are controlled by the system. IOL injection is fully controlled by the surgeon through the footswitch. An IOL injection speed control loop monitors actual injection speed and prevents excessive injection speed relative to the requested speed.

1.7 FLUIDICS

- 1.7.1 The main function of the Fluidics system is to provide irrigation (active or gravity) and aspiration to the surgical site during a cataract removal procedure. Pressure sensors enable the system to detect an overpressure or underpressure condition relative to a surgeon-selected IOP target setting. Additional control features are provided to allow adjustment to the level of flow compensation based on the surgeon's observations of the anterior chamber fluctuations. This provides flexibility to customize the system to accommodate for differences in surgical technique, incision size, tip/sleeve selection, or surgeon preference. *Figure 2-2* shows a diagram of the fluid flow in the fluidics system.

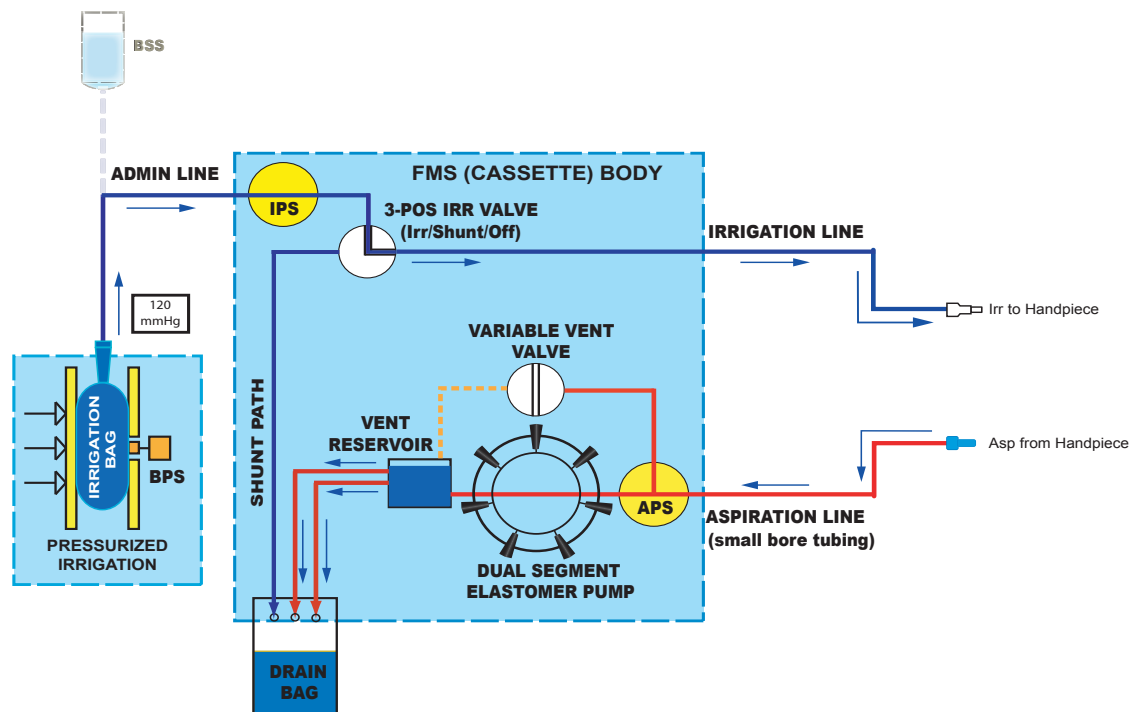


Figure 2-2 Fluidics Fluid Flow Diagram

- 1.7.2 Irrigation/Aspiration - The fluidics subsystem assembly uses independent irrigation and aspiration pressure sensors (Irrigation Pressure Sensor (IPS) and Aspiration Pressure Sensor (APS)) to measure the irrigation and aspiration pressure levels, and provide the surgeon with adjustable fluidics parameters (vacuum, flow and irrigation pressure). The pump mechanism utilizes the principle of positive displacement of fluid using a peristaltic pump. The fluidics assembly directs the flow of BSS* Irrigating Solution through the Fluidic Management System (FMS; commonly referred to as the "cassette") by way of rotary irrigation and vent valves.
- 1.7.3 The fluidics subsystem monitors the system FlexRay** communication bus in order to respond to footswitch commands for fundamental fluidics operation of a phacofragmentation surgical system. The fluidics subsystem first enables irrigation flow by turning the irrigation valve in the FMS body to the 'ON' position. Based on footswitch command, the system then enables aspiration flow by turning the peristaltic pump motor while simultaneously irrigating the eye. While the fluidics subsystem is controlling the rotary irrigation valve, vent valve and aspiration pump, the values that it detects on the IPS and APS are communicated to the surgeon via the system display. During aspiration flow, a vacuum tone that emanates from the system speakers can be heard that changes in pitch with response to vacuum levels detected by the APS.
- 1.7.4 Active Irrigation - The Active Irrigation assembly accepts a flexible irrigating solution bag containing Balanced Salt Solution (BSS* Irrigating Solution) and works in conjunction with the Active Irrigation FMS to deliver irrigation to the surgical site and maintain anterior chamber pressure during a procedure. The flexible irrigation solution bag is squeezed between two plates, a stationary plate and a moving push plate driven by a stepper motor, and the bag pressure is monitored by the Bag Pressure Sensor that is part of the stationary plate.
- 1.7.5 During operation, irrigation pressure is controlled in a closed loop manner via input from an Irrigation Pressure Sensor (IPS) within the FMS. The system estimates irrigation path pressure losses based on flow rate and fluid path resistance, then adjusts the pressure at the IPS to compensate for these losses and better maintain downstream fluid pressure at the anterior chamber. This real time adjustment in response to changes in flow rate provides for a more stable intraocular pressure (IOP) than can be achieved with gravity based systems.
- 1.7.6 Gravity Irrigation - The system uses an automated IV Pole assembly to raise and lower the irrigation fluid container, thereby controlling irrigation pressure by the height of the container. Gravity irrigation is available only when the Gravity Irrigation FMS is installed.
- 1.7.7 The fluidics system also provides the following items:
- Coordinates UltraVit* probe drive pressure pulses by way of valve drive and pressure sensor feedback for balanced control of the two pressure lines for the UltraVit* probe
 - Provides power and control for the Convenience Task Light
- 1.8 PNEUMATICS**
- 1.8.1 The Pneumatics Assembly, in conjunction with the MFIO subsystem, supplies and controls the air supply to operate the UltraVit* Vitrectomy probe. It is comprised of a pump, support valves and a pressure sensor.
- 1.8.2 The UltraVit* probe functions by way of alternating pressure applied by control valves to either side of an internal diaphragm that is attached to an inner (cutting) cannula of the probe. The motion induced on the diaphragm then creates the guillotine cutting action by the inner cannula against a port opening on the side of the outer cannula. The cut rate is programmable by the user from Cut-Off to 4000 cuts per minute.

1.9 DISPLAY/TOUCHSCREEN

- 1.9.1 The primary components of the Display Assembly include an LCD, Touch Screen, backlit logo, and Control PCBA. The assembly also contains the structural components that allow it to move to various positions to accommodate different user positions around the front of the console.
- 1.9.2 The 19" LCD is an LED-backlit, 1280 x 1024 SXGA display that displays the Graphical User Interface (GUI). The LCD has a dimming range of 10% for minimum brightness to 100% for maximum brightness. The default setting is 100%.
- 1.9.3 The 19" resistive Touch Screen is mounted directly in front of the LCD and is the primary user input device for the system. The Touch Screen is a 5-Wire Glass Film resistive touch screen with a zero-bezel construction. There is a slight perimeter around the Touch Screen in order to protect the glass edges and visually hide the exposed edges of each layer of the Touch Screen.
- 1.9.4 The Display Assembly utilizes three primary cables that run from the Host module, through the Display Mount assembly, into the Display Arm assembly, and then to the Display assembly. One of these cables carries the LVDS signals from the video card of the Host directly to the LCD. Another cable carries power, and the third carries USB signals.
- 1.9.5 The Display Assembly is mounted to the Display Arm Assembly which in turn is mounted to the Display Mount Assembly. The Display Arm and Mount Assemblies provide the variable positioning movements of the Display Assembly.

1.10 REAR PANEL I/O-WIRELESS MODULE ASSEMBLY

- 1.10.1 The Rear Panel I/O-Wireless Module Assembly provides the interface to support the following rear panel connections:
 - USB - Provides access to the Host USB.
 - RS232 - DB9 connection for communication with the Video Overlay system.
 - RS422 - RJ45 ethernet connection for future use.
 - Audio In - Provides audio filtering and amplification.

- 1.10.2 Additionally, the Rear I/O Panel PCBA provides wireless network connectivity and a wireless connection to the High Definition Video Overlay (HDVO) system.

1.11 FOOTSWITCH ASSEMBLY

- 1.11.1 The footswitch assembly allows the surgeon to command the instrument through various ranges of surgical control. The system can accommodate a number of Alcon footswitches starting with the *Centurion** footswitch in either wireless mode or a direct cable connection to the console. In addition, the console provides a connector for use of the Legacy*/Accurus* footswitch as well as a redesigned version of the Laureate* footswitch.
- 1.11.2 The *Centurion** footswitch has programmable control ranges based on treadle angular position:
 - Position 0 - Resting position; all footswitch controlled surgical functions are stopped.
 - Position 1 - Irrigation
 - Position 2 - Irrigation and aspiration
 - Position 3 - Irrigation, aspiration, and Phaco or other energy control parameter
- 1.11.3 Inside of the footswitch, Position 0 is indicated by a mechanical rest position switch, and the Position 0 feedback from an absolute encoder that is mechanically coupled to the treadle rotation shaft indicating treadle angular displacement. Footswitch detents identify the transition from one footswitch position to another, and are felt by the surgeon when slightly more pressure is required to press the foot treadle from one position into the next. The Footswitch detects and communicates transitions of the footswitch treadle between various footswitch positions (treadle angular position and button states) and communicates this to the MFIO subsystem.

- 1.11.4 Footswitch Wireless Communication - Signals to the MFIO are sent via a highly reliable, secure and proprietary variant of an IEEE* 802.15.4 “zigbee” wireless interface. To ensure the uniqueness and security of the console and footswitch pair, unique identifiers, such as the footswitch serial number and data encryption key are part of the transmit packet. The console filters all incoming packets based on the footswitch serial number present in the packet. In this manner, the console and footswitch pair become immune to wireless interference from other devices.
- 1.11.5 If cabled to the console for battery charging or to remove the wireless capability, the footswitch to console communication is accomplished by way of a Controller Area Network (CAN) interface to the MFIO subsystem. Footswitch data from the Multifunction subsystem is then transmitted in real-time to other system components via the FlexRay** communication bus.
- 1.11.6 The wireless footswitch stores on hangars on the back of the console for an inductive overnight charging cycle to replenish its internal lithium ion battery. The act of either hangar charging, or cabling also creates the unique pairing partnership of footswitch to console based on device serial number so that multiple Systems with wireless footswitches may be used in close proximity without crosstalk interference.

1.12 REMOTE CONTROL

- 1.12.1 The remote control provides a remote navigational interface to the Graphical User Interface through the InfraRed (IR) receiver located on the PEL PCBA. The signal is transmitted to the Host Module through the MFIO PCBA.

1.13 VIDEO OVERLAY

- 1.13.1 The optional Video Overlay provides a means of capturing surgical parameters overlaid on top of microscope video for later review off line. The system must be used in conjunction with a DVR or VCR to capture the combination of video and parameter visual indications. The VideoOverlay system must be connected to the system by a cable to the rear panel while the High Definition VideoOverlay system may be connected wirelessly (communicates through wireless connection on Rear I/O PCBA).

DETAILED THEORY OF OPERATION

2. POWER SYSTEM

2.1 The power system is comprised of four major functional blocks:

- AC input and conversion to VDC (Power Entry Module and Power Supply)
- Distribution via the Multi-Function Input/Output PCBA (MFIO PCBA)
- Battery backup (including charger on MFIO)
- A dedicated host DC power converter module.

The four blocks work together to convert a universal 90-264 VAC 50/60 Hz input into a 24 VDC regulated power bus that meets the system power requirements. *Figure 2-3* shows a block diagram of the *Centurion** Power System.

2.2 The **AC Power Entry Module** is located at the bottom of the system rear panel. A power cord connects directly to the Power Entry module which delivers facility power through two 6.3 amp fuses directly to the DC Power Supply.

2.3 The vender-supplied 750W AC/DC Power Supply sends 24 VDC (V24PS) to the MFIO which manages and distributes 24 VDC to the rest of the system. Additionally, the power supply provides a standby voltage (V10SB) to power essential circuitry on the MFIO when AC power is available but the console is shutdown.

2.4 POWER MANAGEMENT

2.4.1 The MFIO manages and distributes the console 24 VDC bus. As shown in *Figure 2-3*, there are two independent sources for the console 24 VDC bus; the DC power supply and two 12 V lead acid batteries (in series).

2.4.2 Under normal conditions, the power supply powers the console 24 VDC bus. Other than the 24 V signal, there are 3 other signals at J13 interface:

- ACFAIL - Allows the MFIO to switch to battery, before loss of 24 VDC

- V10SB - Provides a standby voltage in the range of 7 to 14V to power low power circuitry and minimize battery usage when AC is available but the console is shutdown.
- PSEN* - Allows the MFIO to turn ON/OFF the 24 V output of the power supply, but does not remove V10SB. The MFIO power consumption (on battery or V10SB) is approximately 25 mW in a shutdown state.

2.4.3 When the Standby switch is on and AC power is available, 24 VDC (V24SYS) is distributed to the system modules/ components listed below. Each module then converts the 24 VDC to the voltages required by that module and dependent components.

- Upper Backplane PCBA
- Host PCBA
- Footswitch Contactless Charger PCBA
- Footswitches (wired and wireless)
- Fans (3)

2.4.4 In the event of either an AC failure or failure of 24 VDC output from the power supply, the MFIO switches to console battery power to maintain the integrity of the 24 VDC bus. Under software control, the MFIO switches the source of the 24 VDC bus between power supply and battery by monitoring the state of the power supply (ACFAIL and 24V output of power supply) and the battery voltage. An overvoltage protection circuit has been added to delay the switch-over from battery to power supply (if the system 24 VDC bus is greater than the power supply output by approximately 2 volts or more) until the 24 VDC bus voltage has dropped to the same level as the console battery.

2.4.5 In the event of a blank MFIO CPLD, or during re-programming of the MFIO CPLD, pull down/up resistors override the weak CPLD internal pull-ups (5K-25K ohms) forcing the power supply into an ON state, and selecting power supply as the source for console 24 VDC bus. This allows the console, including the host and all other sub-modules to power up (CPLD programmable internal pull-up resistors, 5K-25K ohm, are active during power-up, with I/O pins tri-stated, during in-system programming, and for a blank device).

2.4.6 A number of soft start circuits are used to both minimize the in-rush current associated with capacitive charging during power startup, and also to act as very fast resettable fuses that limit the current to set values (different for each circuit). These circuits will time out and remove output from the load if the maximum set current is reached and maintained for a time set by timer capacitors for each circuit.

2.5 POWER UP SEQUENCE

2.5.1 The MFIO can be powered up in one of two ways: the Standby Switch is pressed or the contactless charger proximity sensor is triggered.

2.5.2 Standby Switch Pressed:

- If the AC/DC power supply is available, a momentary press of the standby switch will turn ON the AC/DC power supply, and enable logic DC supplies (V5P0, V3P3, V2ON), powering the MPC, CPLD and all the logic on the MFIO.
- In absence of 24 V output from the power supply, the logic DC supplies will run off of the console battery pack, as long as the battery pack output voltage exceeds 20.3 V \pm 1.0 V. The signal from the standby switch is processed by circuitry that runs on V3P3_SNS, which is backed up by the console battery backup, as long as the console battery pack voltage is above about 20.3V \pm 1.0 V.

- Once the CPLD starts running, it will then process the signals from the standby switch and the contactless charger proximity sensor.
- If the AC/DC power supply is not available (loss of AC input, or DC output of the power supply), the MFIO will still power up, assuming battery pack voltage is above 20.3V \pm 1.0 V, but will not power up the console.

2.5.3 Contactless Charger Proximity Sensor Triggered:

- In the event of detection of a wireless footswitch in the cradle on the rear panel of the console, the power supply will be enabled, as well as logic DC supplies (V5P0, V3P3, V2ON).
- In absence of 24 V output from the power supply, the logic DC supplies will run off of the console battery pack, as long as the battery pack output voltage exceeds 20.3 V \pm 1.0 V. Once the MFIO is up and running, it will start communicating with and charging the battery in the cradled footswitch, and it will do so using the console battery pack, in case the power supply 24V output is not available.

2.5.4 Once the MFIO is up and running, the MFIO software will determine the state of the console and decide whether or not to power up the console. For example, while in shutdown mode, detection of a cradled footswitch will only result in the MFIO being powered, but not the rest of the console, whereas detection of a standby switch press will result in the entire console being powered up.

2.6 CONSOLE POWER SHUTDOWN

- 2.6.1 The console can be shut down in two ways, depending on the state of the MFIO.
- 2.6.2 Normal Shutdown – While the console is running, the user can initiate a shutdown request via the GIU or press of the standby switch. After the user confirms the shutdown request (via GUI), the console goes through a shutdown sequence to remove power from the console, by turning OFF the power supply (asserting PSEN*), or by disconnecting the output of the battery from the console 24V bus (U95) if on battery power. If the power supply has AC power available to it, turning the power supply OFF (asserting PSEN*) does not remove the standby voltage, V10SB, from supplying a minimal set of circuitry that processes signals from the standby switch and a cradled footswitch.
- 2.6.3 Microcontroller on MFIO not functioning normally – In this case, the CPLD recognizes that the microcontroller is non-functional (CPLD expects a sequentially toggling bit, as part of the SPI message every 5 msec) and will allow the console to be shut down if the standby switch is pressed for a minimum of 5 seconds, if there is no successful SPI communication with the microcontroller for 50 msec.

2.7 CONSOLE BATTERY CHARGING

- 2.7.1 The console backup batteries (two valve-regulated lead-acid 12 V batteries) are charged by circuitry located on the MFIO. The MFIO microcontroller monitors and controls the charging process through IC's U99 - U100.

2.8 DC SUPPLIES

- 2.8.1 There are multiple DC voltage supplies on the MFIO for its internal use. In addition to the battery and power supply 24 VDC outputs, all the DC voltage sources generated on the MFIO are made available to the ADC inputs on the microcontroller for software monitoring. These various supplies are broadly grouped into two categories; the ones that are always ON, regardless of the availability of AC, and all the others.

DC Supplies always on:

- V24_SNS is used to power the logic supplies that always need to ON. V24_SNS is generated from one of three possible sources (OR logic) in the following order: power supply 24V out, power supply V10SB (standby voltage) when the 24V out from power supply is not available; and lastly from battery if neither 24V nor V10SB from power supply is available, provided the battery is charged to at least 20.3V \pm 1.0 V.
- V5_SNS is derived from V24_SNS by a switching regulator and supports some of the logic associated with footswitch proximity detection), the standby switch, and the battery backed 5 V supply used by the host.
- V3_SNS is the 3.3V output of an low-dropout regulator derived from V5_SNS, and is used to power the footswitch proximity detection circuitry, the standby sense circuitry, the real time clock on the MFIO, and other miscellaneous logic.

Other DC Supplies:

- V24SYS is the main 24V supply that powers the console and is derived from power supply or battery 24V DC outputs based on software control.
- V24ON is the OR'ed output of V24PS (24V) output from the power supply and V24BT from the battery (U88, Q31-33). This supply is used to generate V24CC and V5P0. Software can inhibit the use of battery or power supply in generating V24ON depending on the condition of the battery and power supply.
- V24CC is used to power the footswitch contactless charger circuit residing on the Footswitch Charger PCB. Software enables or disables the soft start circuit that actually outputs V24CC.
- V24M1 is derived from V24SYS via a soft start circuit and is used to energize the audio, PEL, Rear Panel IO PCBA, Service Port (J31), VBAT for the Flexray transceivers, and the two upper console fans. This soft start is set for maximum nominal current of 5 Amps and will timeout in about 32 msec if the load current stays at maximum set value for longer than the timeout window.
- V24M2 is derived from V24SYS via a soft start circuit and is used to energize the IV pole and the pneumatics air source circuitry. The soft start limits the maximum current to 5 amps, nominal, with a nominal timeout window of 32 msec. V24M2 output is disabled in the event that software places the system in SAFEMODE, or in the event of a reset being generated by either of the two voltage supervisors (U83 for CPLD and U6 for the microcontroller) detecting a low voltage condition. In absence of V24M2, the IV pole is de-energized and brought to a stop by a mechanical brake, and the air pump that pressurizes the air source accumulator is turned OFF.
- V24M3 is derived from V24SYS and used to power the lower console 24 V fan, MFIO PCBA fan, and wired footswitches.
- V18_AUDIO is the 18 VDC output of a DC/DC switching regulator sourced by V24M1 (maximum output current of 3 Amps) to support the audio amplifier.
- V5P0 is the 5 VDC output of a switching DC/DC regulator (U12) sourced by V24ON and capable of outputting up to 3 Amps. V5P0 is used in logic circuits internal to the MFIO and to generate 3.3 VDC. V5P0 can be shut down by software in case of a console shut down, and it can be turned ON in the event of a standby switch press or detection of a wireless footswitch cradled to the console.
- V5_PEL is the 5 VDC output of a DC/DC switching regulator (U77) sourced by V24M1 and capable of outputting up to 3 Amps. The V5_PEL is used to supply the PEL panel LEDs, and is turned ON/OFF by software.
- V3P3 is the 3.3 VDC output of a DC/DC switching regulator sourced by V5P0, and capable of supplying 3 amps. V3P3 is available whenever V5P0 is available, and it supplies the I/O voltage for the microcontroller and CPLD, in addition to all the logic not supported by V3P3_SNS. V3P3 is also used to generate the core voltages for the microcontroller (1.2 V) and the CPLD (1.8 V).
- V1P2 is the 1.2V DC output of a linear regulator that resides within the microcontroller.
- V2ON is the 1.8 VDC output of an LDO (U91) that supplies the core voltage of the CPLD.

2.9 INDUCTIVE FOOTSWITCH CHARGING

- 2.9.1 The MFIO provides DC power and control signals to interface with the inductive charger and proximity detection circuitry that is located on the Footswitch Charger PCB (PCB is mounted to lower rear panel). Footswitch charger power comes from V24CC, which is routed through current-sense resistor R288 to charger connector J25.

3. FLEXRAY COMMUNICATIONS

- 3.1 The system uses a FlexRay** communication bus for communications between the subsystems. FlexRay** is an automotive communications protocol that is faster and more reliable than a CAN (Controller Area Network) bus. It was chosen for its real-time, highly deterministic data transmission throughout the system with built-in CRC (Cyclic Redundancy Check) for data integrity.

4. HOST MODULE

- 4.1 The Host Module shown in **Figure 2-4** uses a custom COM-Express CPU module to communicate system level controls to subsystem modules through a PCIe FlexRay Controller located inside the host module. In addition it controls the display and processes user input from the touch screen. **Figure 2-5** shows a block diagram the Host module.
- 4.2 FlexRay** Interface - The FlexRay** PCB is a custom OEM PCBA for *Centurion** Vision System. The FlexRay differential pairs FR_A± and FR_B± are routed to the backplane and distributed from the MFIO PCBA to the US and Fluidics Modules for command and controls signals.
- 4.3 Solid State Drive (SSD) - The 64 GB 2.5" Solid State Drive communicates with the CPU via the provided SATA bus. It enables fast read/write for the following data:
- Operating System (OS) - Windows 7 Embedded
 - *Centurion** Vision System application
 - Subsystem software
 - Surgeon memory settings
 - Procedure data
 - Event logs (OS and application)
 - Hardware metrics

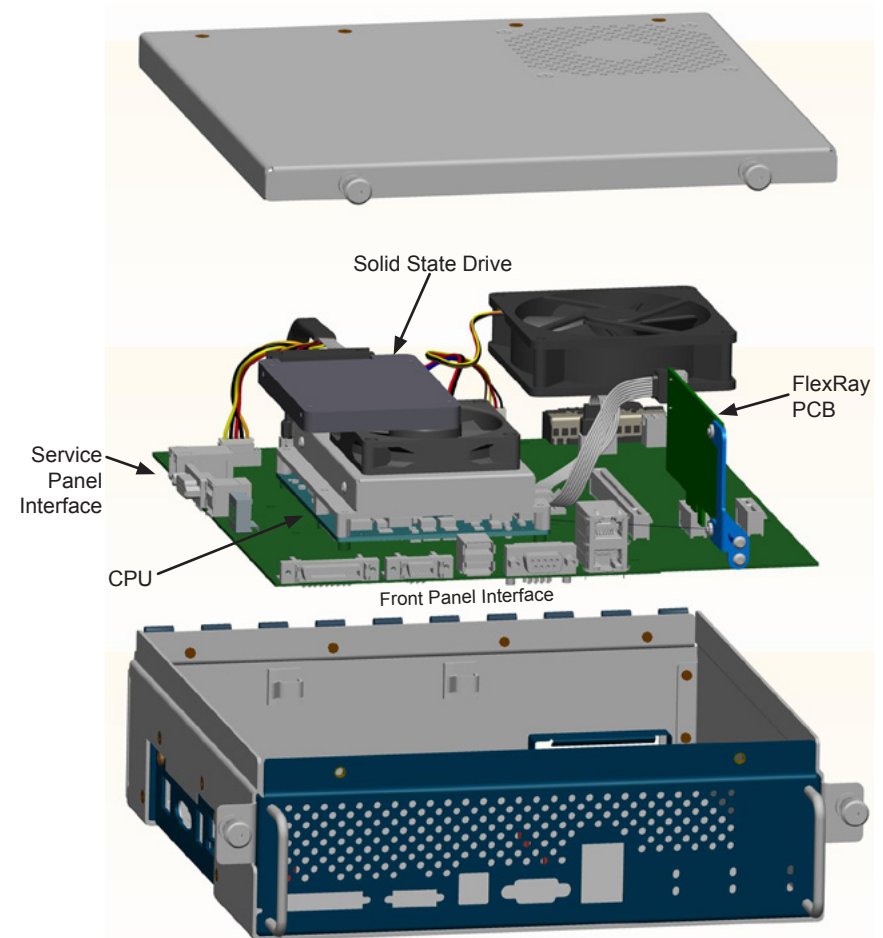


Figure 2-4 Host Module

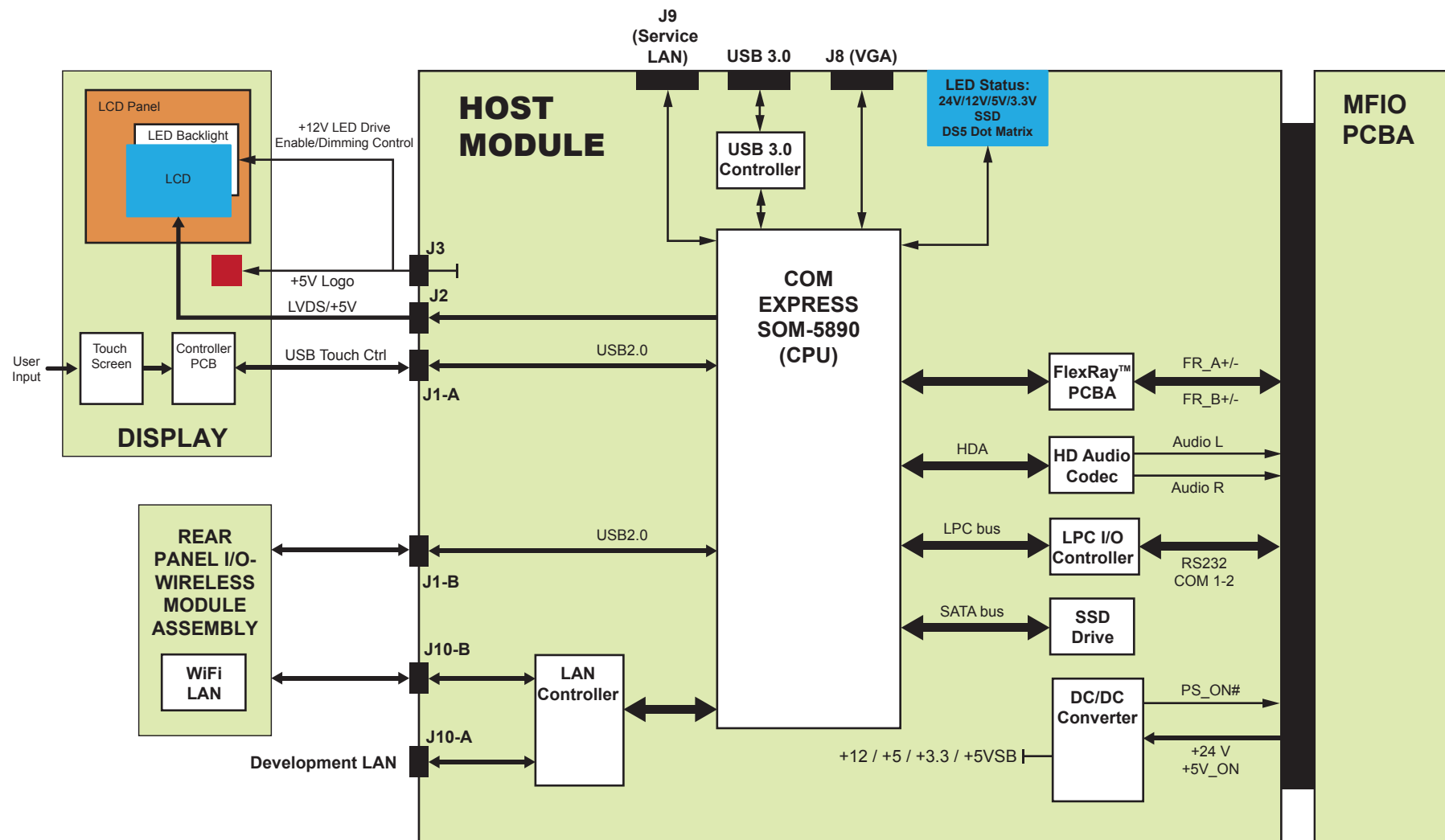


Figure 2-5 Host Module - Display Block Diagram

4.4 HOST FRONT PANEL INTERFACE

4.4.1 Display/Touchscreen Interface

- Connectors J2, J3, and USB J1-A provide the Host with a direct connection to the Display panel. The display panel is a Color Active Matrix LCD with a 2-channel LVDS interface through a 30-pin LCD LVDS (Low Voltage Differential Signaling) native connector. The LCD screen supports SXGA (1280 x 1024) 16.7M colors and an LED backlight LCD through a 9-pin connector.
- Host connector J2 is a 36 pin connector provide the LCD with LVDS data and clock signals and +5V.
- Host connector J3 is a 14 pin connector providing backlight voltage (+12 V), Enable, and a +3.3V PWM dimming control signal. PWM dimming is maintained in BIOS and the default is maximum brightness.
- Host connector USB J1-A is connected to the Display Panel Touch Screen controller for the touch screen interface.
- The Host LVDS power panel and backlight provide jumpers selection should a future obsolescence of LCD panel arise.
- USB Rear Panel - Host connector J1-B (Type A USB) provides the connection to the Rear Panel I/O PCB. The Rear Panel USB port provides user access for transferring files.
- Host connector J5 provides Host power status as follows: J5-2: +12V, J5-5: +5V, J5-1: +3.3V, J5-4:+5VSB, J5-9: GND.
- RJ45 connectors J10-A and J10-B for development purposes.

4.5 SERVICE PANEL INTERFACE - The service panel is located on top side of the Host Module and is accessible by removing the console drawer.

- Status LED's - Four green status LED's are provided for 24 V, 12 V, 5 V, and 3.3 V. One blue LED is for SSD Drive activities.
- BIOS Status Dot Matrix Display - DS5 is 7-segment dot-matrix LED for displaying BIOS status or error codes.
- USB 3.0 - J6-A and J6-B provide USB 3.0 access for software installation. The USB 3.0 is derived from the Host carrier board USB 3.0 controller.
- VGA Display Connector - J8 is a 15-pin VGA connector that provides a service connection to a VGA monitor.
- Service LAN RJ45 - J9 provides service LAN access.

4.6 SYSTEM BACKPLANE AND HOST POWER INTERFACE

- The Host Module interface to MFIO PCBA and subsystem through backplane connector J7 for FlexRay bus, Serial (USB and RS232), Audio and power control (PS_ON#). The Host received +24V from MFIO board through J7B-PF1-4 power blade for power converter and +5VSB_BB battery backup from MFIO to J7A-A3 pin.

- Power Converter - The Host Carrier board converts the +24V supply to DC voltages (+12V, +5V, +3.3V and +5VSB) required for the COM Express Module. These voltages are routed to front panel connector J5 for power status. The voltages have series resistors for short circuitry protection from measurement. +5VSB_BB is used exclusively for CMOS battery backup when power from the console is removed.

- **FlexRay Interface** - The FlexRay PCBA is mounted inside Host module at the J12 PCIe slot. The FlexRay PCBA is connected to SATA connector J4 on the carrier board for routing FlexRay differential FR_A \pm and FR_B \pm pairs to connector J7A. The FlexRay differential bus network is then distributed to the subsystems for FlexRay interface command and control.
- **HD Audio Channels** - The Host HD audio channel outputs (Line_Out_R, Line_Out_L) are routed to J7-A1 and J7-B1 for MFIO audio processing and amplification to the console internal speaker for voice confirmation or audio output.
- **Serial RS232 Ports** - The COM Express RS232 signals, COM1_RxD and COM1_TxD, are routed to the MFIO at J7A D5 and J7A D6 then to the Rear Panel I/O panel for HD Video Overlay Interface.

COM2 serial RS 232 signals are routed to J7A for serial interface with the MFIO microcontroller.

- **USB Interface** - The Host USB 2.0 interfaces to MFIO through J7A F1 (+5_USB), F2 (USB2_D-), F3 (USB_D+), F4 (GND). The USB interface enables the Host module to configure and download code to the programming devices through the MFIO USB to JTAG converter.
- **PS_ON#** - PS_ON# goes high to inform the MFIO CPLD logic that the Host Window application has completed the shutdown. The Host provides PS_ON# at J7A pin C12.

5. DISPLAY MODULE - FRONT PANEL

- 5.1 The Display Module is the primary user interface for the system. The LCD displays the GUI (Graphical User Interface) and the Touch Screen accepts user input. *Figure 2-5* shows the electrical block diagram for the module. The Display Module is mounted to the Front Panel which is designed so that it can be repositioned to accommodate different user positions around the front of the console.
- 5.2 The primary components of the Display Module include the LCD, Touch Screen, backlit logo, and Control PCB. The assembly also contains structural components, cables, plastic enclosure, and user handle.
- 5.3 **LCD** - The LCD is a LED-backlit TFT 19" SXGA (1280 x1024) that is used to display the GUI. The LED-backlit is built-in and there is no external inverter PCB required to drive the LCD lighting. The LCD supports 2 channels of 24-bpp (8 bits/color) LVDS differential pairs, plus a differential clock signal per channel and +5V to power the LCD panel. All connection signals and power inputs come from Host Module through a 30-pin connector mounted on the backside of the LCD panel.
- 5.4 The built-in LED backlit driver board receives +12V and two control signals from the Host through a 9-pin connector. Control signals are Enable (active High) and a PWM Dimming to control LCD brightness. The PWM dimming ranges from 10% for minimum brightness to 100% for maximum LCD brightness. The dimming control is in the Host BIOS; but is set by default to 100% for maximum brightness.
- 5.5 **TOUCH SCREEN** - A 19" resistive Touch Screen is mounted directly in front of the LCD. This is the primary user input device for the console. The Touch Screen has a 5-Wire Film-Film-Glass resistive touch screen with a zero-bezel construction. There is a slight perimeter around the Touch Screen in order to protect the glass edges and visually hide the exposed edges of each layer of the Touch Screen.

5.6 TOUCH SCREEN CONTROLLER PCB - The Touch Screen Controller PCB receives analog signals when touched by making electrical contact with the resistive coating on the glass. The Touch Screen Controller digitizes the voltages and converts them into USB signals, then sends them to the Host.

5.7 LOGO AND BACKLIGHT - The logo along the bottom border on the front of the monitor is comprised of a translucent crimson colored film with LED backlight. The +5V power on the Logo Backlight comes from a pig tail off the monitor LED Backlit power cable.

5.8 CABLE ROUTING - The Front Panel Display utilizes three primary cables that run from the Host, through the Display Mount assembly, into the Display Arm assembly, and then to the Display assembly. One cable carries the LVDS signals from the Video card of the Host directly to the LCD. Another cable carries power, and the third carries USB signals.

6. US PHACO, AUTOINJECTOR, AND AUTOMATED CAPSULORHEXIS FUNCTIONALITIES

6.1 The Ultrasound Controller PCB is responsible for driving the ultrasound, IOL inserter, and automated capsulorhexis handpieces. This module contains power amplifiers, control electronics and software necessary to operate these handpieces.

6.2 Key features supported by this module include:

- High performance *Centurion** torsional handpiece.
- High performance *Infiniti** *Ozil** handpiece.
- Several traditional modalities of ultrasonic power control including continuous, pulsed, and “burst” application of ultrasonic power, as well as duty cycle management.
- Power assisted IOL insertion.

6.3 The Ultrasound PCB block diagram in Figure 2-6 contains the following major circuit blocks:

- Microcontroller and Programmable Logic to control/monitor other circuits and communicate with the system.
- A Boost Voltage Converter to supply power to Class D and Autocap drivers.
- Class D amplifier to drive ultrasound handpieces.
- Class D feedback
- IOL inserter circuit to drive AutoSert* handpiece
- Autocap circuit to drive auto-capsulorhexis probes
- Handpiece EEPROM interface

6.4 SPI Bus (Serial Peripheral Interface Bus) - The SPI bus is used to communicate with the following peripherals:

- Serial EEPROM on the PCB
- Serial EEPROM embedded in each handpiece
- Programmable Logic Device (PLD)

6.5 Microcontroller and PLD - The microcontroller communicates with the host and other subsystems through the FlexRay Communication Interface and controls the other circuitry based on this information. The microcontroller also monitors the circuitry through the ADC and various I/O's. Settings and configuration information can also come from the Subsystem Configuration EEPROM located on the PCB.

The microcontroller is programmed via the JTAG interface from the MFIO through the Backplane Connector. The PLD is programmed via the JTAG interface either from the PLD Programming Connector or from the MFIO through the Backplane Connector.

- 6.6 Several LED's are located on the front and the back of the PCB for quick functional evaluation. LED's are defined below and are green unless otherwise indicated.

Back of PCB (visible when top cover of console is removed)

- DS1: 24V on
- DS2: 3.3V on
- DS3: FlexRay active (blue)
- DS4: Microcontroller is in reset (red)
- DS5: Fault indicator 1 (red)
- DS6: Fault indicator 0 (red)
- DS7: Heartbeat from microcontroller (flashing)

Top of PCBA (for benchtop testing)

- DS8: 12V for Autocap Gate Drivers On
- DS9: Autocap Drive Voltage On
- DS10: 12V for US Gate Drivers On
- DS11: Class D Drive Voltage On
- DS12: Boost Power Supply On
- DS13: 5V for FlexRay
- DS14: 5V Analog On
- DS15: -5V Analog On
- DS16: 12V for US Gate Drivers, Fan, Relays, Analog Supplies On
- DS17: IOL Motor Drive Voltage On
- DS18: 3.3V for Top and Middle (Centurion and IOL) HP EEPROM Interface On
- DS19: 3.3V for Bottom (Ozil) HP EEPROM Interface On
- DS20: 12V for IOL Motor Gate Drivers On
- DS21: 5V for Autocap Current Sense

- 6.7 **Boost Voltage Converter** - This circuit generates the desired supply voltage for driving the US handpiece (from the Class D) or the Autocap probe. This DC to DC converter takes 24 Vdc as an input and generates output voltages between 24 and 48 Vdc. The voltage is controlled by a PWM signal from the microcontroller.

- 6.8 **Class D Amplifier** - This circuit generates a sine wave output to drive the Ultrasound handpiece crystal. This driver can provide up to 50 W of power over a frequency range of 30 to 60 kHz.

The amplifier consists of 4 FET's which form an H-bridge configuration. These FET's are driven by signals from the microcontroller via power gate drivers. The FET's switch current through a filter which creates a sine wave. This sine wave can be switched by a set of three relays to apply power to any of the three output transformers or an internal resistive load (for testing only). The relays are configured so that only one output can be driven at a time. The voltage for the driver comes from the Boost Voltage Converter set to 48 V.

- 6.9 **Class D Feedback Control** - Handpiece voltage feedback is measured on the primary of power transformers, and is related to the actual handpiece voltage by the turns ratio of transformers (12). This voltage is scaled and filtered then passed to the RMS/DC converter which converts the RMS value of the AC voltage to an equivalent DC level.

Handpiece current is also measured on the primary of power transformers using a small sense resistor in the main current path. The voltage across this sense resistor is scaled and filtered then passed to the RMS/DC converter which converts the RMS value of the AC voltage to an equivalent DC level. These DC levels are amplified to appropriate levels, filtered, and passed into the microcontroller ADC.

From these voltage and current readings, the microcontroller makes adjustments to the drive signal. Handpiece voltage adjustment occurs through the gate drive signals to the Class D amplifier. Two interdependent control loops (power and frequency) are used to control the stroke of the ultrasonic

handpiece. The power control loop monitors and maintains the appropriate handpiece drive power. The frequency control loop maintains continuous tuning of the handpiece to compensate for handpiece loading and drift. The ultrasound driver contains the circuitry to create the sinusoidal drive voltage and frequency with analog feedback to close the loop. The ultrasound driver digitizes and processes this feedback to provide a continuous tracking of both digital control loops.

The ultrasound driver also contains various circuitries to detect fault conditions and to disable power output. The US Controller PCBA then communicates this fault to the Host via the FlexRay** interface.

6.10 IOL Driver for AutoSert*Handpiece - The actuation of the IOL injector is driven by a Brushless Sensorless DC motor. The brushless motor is controlled in a six-step commutation sequence using a triple half bridge to steer current through the three motor windings. Biasing the windings transforms electrical energy into mechanical energy by creating an electromagnetic field that applies torque to the magnetic rotor.

During each step in the sequence, two of the windings are biased in opposite directions, while the third winding is left floating. As the internal magnetic rotor passes by the unbiased winding, a back electromagnetic force induces a voltage back into the winding. The motor controller commutates the current through the windings when the voltage induced into this winding is equal to one-half the drive voltage.

The IOL driver performs speed control by a combination of pulsing the voltage applied to the motor on and off in varying duty cycle, and varying the IOL supply voltage. The position of the plunger is known from the number of commutations since being in the home position.

6.11 Handpiece EEPROM Interface - Prior to tuning a handpiece, the system must know which type of handpiece is present and its voltage calibration. The subsystem reads each of the handpiece ports when no power is applied to the handpiece. Each ultrasonic handpiece has an EEPROM which contains parameters specific to each handpiece such as:

- Handpiece ID.
- Calibration parameters necessary for proper ultrasound stroke at full power.
- Calibration parameters necessary for proper torsional stroke at full power.
- Tune start and end frequencies.

In order to properly tune and drive a handpiece, software must obtain calibration parameters from the handpiece EEPROM.

Each IOL handpiece also has an EEPROM which contains a handpiece ID and other parameters. The subsystem must identify the type of handpiece inserted in each connector in order to properly drive the output.

The microprocessor communicates to the handpiece EEPROM through the SPI Bus through an optically isolated circuit.

6.12 Power On Sequence and Limits - Due to the large capacitance on the PCB, hot swap controllers are used to limit the start up current to various power circuits. In addition, these controllers can be used to turn power on and off to the circuits in case of a fault. The Backplane PCB includes a hot swap controller that limits the in-rush current when the power is turned on or the board is plugged in with power on.

The startup sequence is as follows:

- 24 V is applied to low power circuitry; boost converter output is disabled, Autocap, IOL, and Class D power in is disabled.
- Microcontroller turns supplies on and off as appropriate for surgery modes and handpiece tuning.

In case of a fault or overcurrent, the voltage would be turned off on the faulted circuitry.

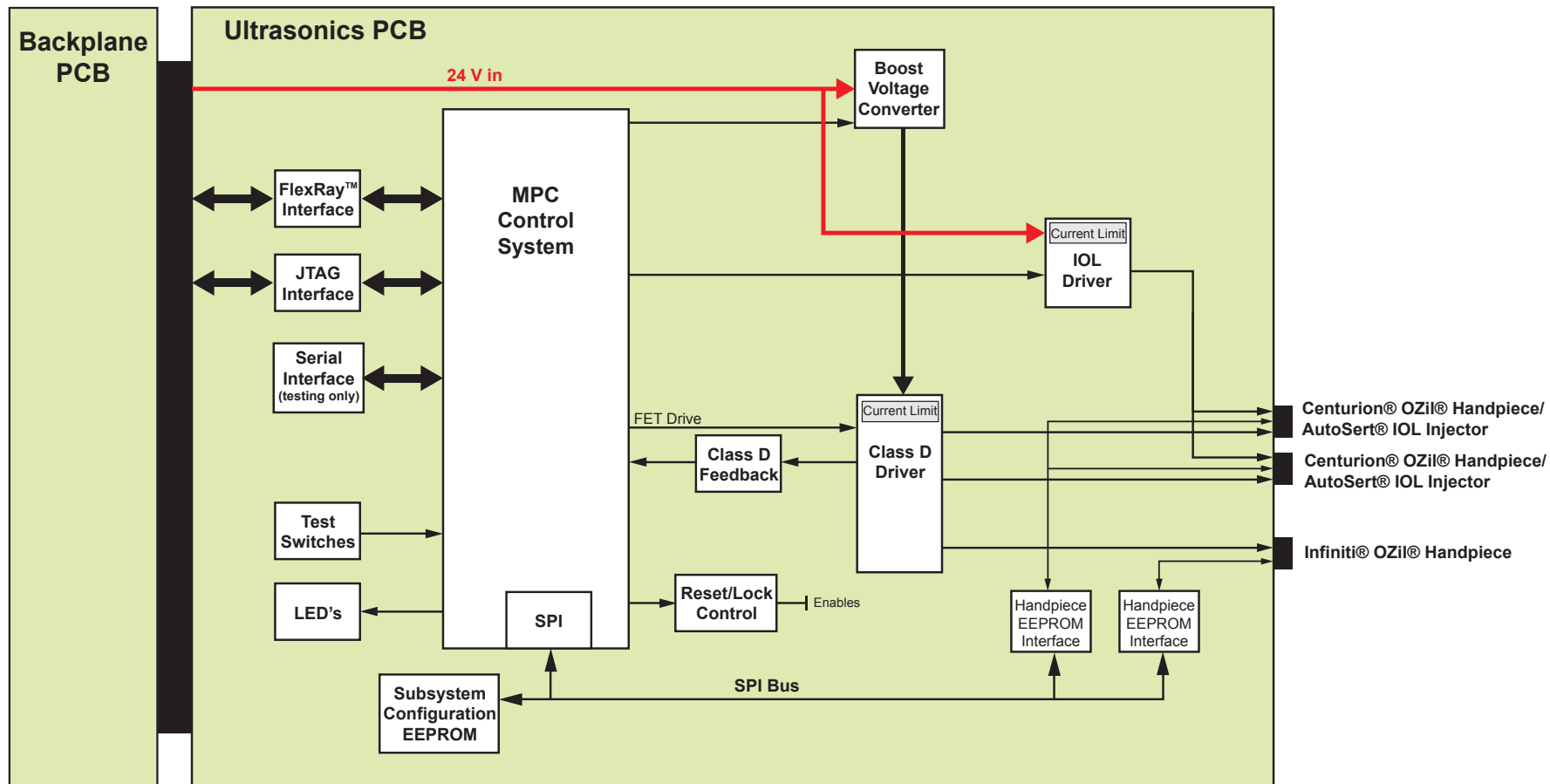


Figure 2-6 Ultrasound PCB Block Diagram

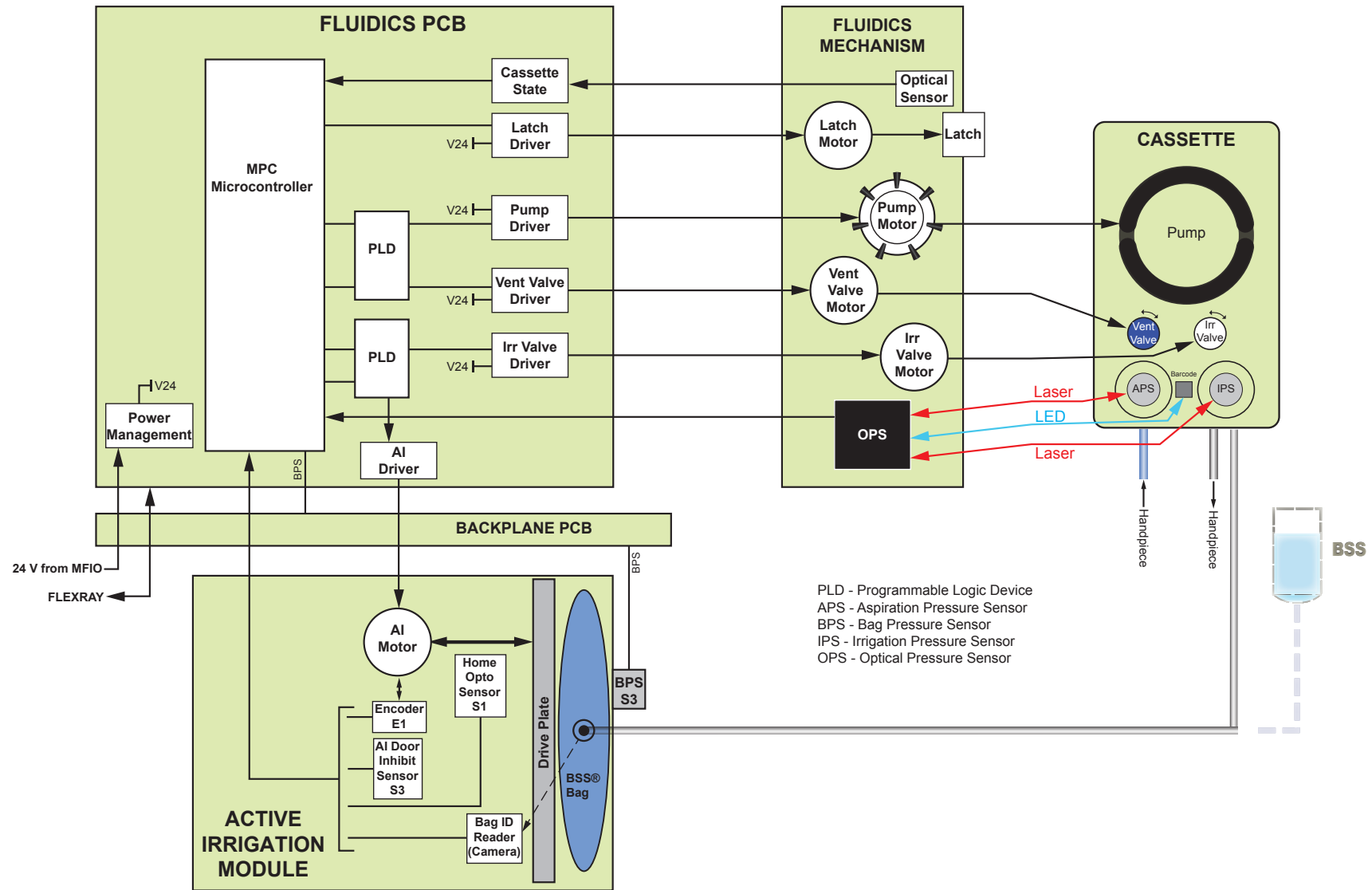


Figure 2-7 Fluidics Block Diagram

7. FLUIDICS

- 7.1 There are two primary functions served by the fluidics system during the surgical procedure; one is to aid in the emulsification and removal of cataract lens material, and the other is to maintain a stable work space in which to perform the surgery. A block diagram of the Fluidics System is shown in *Figure 2-7*.

- 7.2 The *Centurion** Vision System provides for control of fluid into and out of the eye during the surgical procedure. The basic fluid circuit is illustrated in *Figure 2-2* on page 2.3. There are two methods of generating input pressure that are supported by the system; Active Irrigation (AI) and Gravity Irrigation.
- 7.3 Gravity Irrigation uses a bottle or bag of irrigation solution hung from a motorized IV pole to generate and control pressure. Active irrigation replaces the IV pole with a mechanism that compresses a flexible bag of irrigation solution to generate and control pressure.
- 7.4 **Active Irrigation** provides a much more rapid means of changing pressure and is utilized as part of the Active Fluidics system to provide dynamic control of pressure at the surgical site that is not possible with a traditional gravity based system. Other than the means of generating input pressure, the fluid circuits for Gravity and Active irrigation configurations are the same. The shunt path allows for ease of priming of a replacement irrigation bag by directing air from the irrigation bag directly to the drain bag. This provides for rapid priming of a replacement bag without the need to re-prime the entire fluid path. In addition, the cassette uses small bore aspiration tubing which resists out flow from the eye during occlusion break surge.
- 7.5 **Fluid Management System (FMS)** - The Fluidics Management system refers to the consumable cassette that interfaces with the Fluidics Module and provides for routing and control of fluid to and from the eye. All control and sensing functions are non-invasive relative to the sterile patient fluid path. Key components of the FMS are identified in *Figure 2-8*.
- 7.5.1 **Alignment Features** - Alignment of the FMS with the fluidics module is accomplished via an alignment hole and alignment slot in the body of the FMS that engage corresponding alignment pins within the module. This ensures proper interface with controls and sensors once the FMS is drawn into the module and clamped.

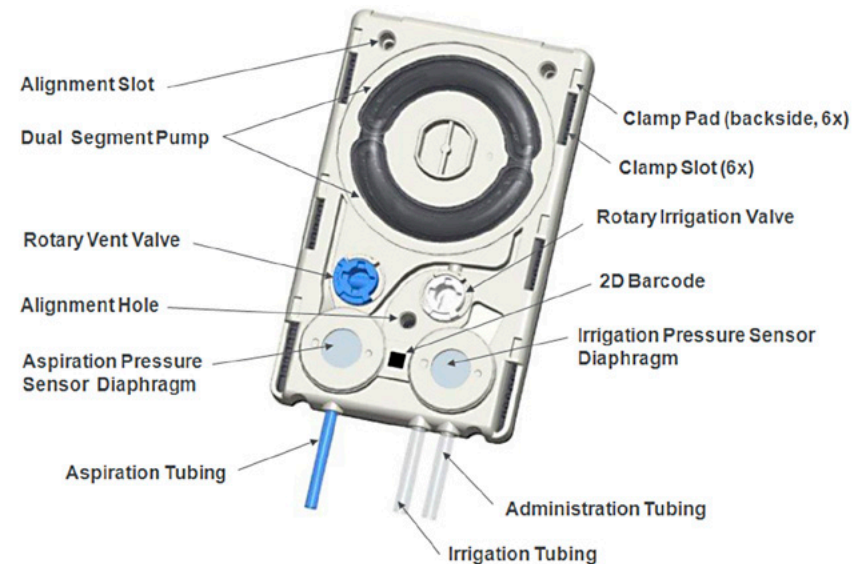


Figure 2-8 Fluidics Management System (FMS)

- 7.5.2 **Clamping Features** - Clamping tangs from the fluidics module engage the FMS by way of six slots along the edges of the FMS and clamp against pads on the inside of the FMS base.
- 7.5.3 **Administration Line** - The administration line channels fluid from the irrigation source to the FMS. It consists of non-DEHP (Di(2-ethylhexyl) phthalate)) PVC tubing which has .188 inch Outer Diameter (OD) x .125 inch Inner Diameter (ID) (clear, no tint). For Gravity configurations, the tubing is 64 inches long and connected to a spike/drip chamber assembly at the distal end. For Active configurations, the tubing is 30 inches long and connected to a right angled spike at the distal end. The spike provides a shield to facilitate spiking of the bag by a sterile scrub nurse.

- 7.5.4 Irrigation Pressure Sensor (IPS) - Fluid coming into the FMS from the administration line enters a chamber that is covered by the irrigation pressure sensor diaphragm. Changes in pressure within the chamber result in deflection of the diaphragm (convex for pressure and concave for vacuum). An Optical Pressure Sensor (OPS) within the fluidics module translates deflections of the diaphragm into corresponding changes in pressure or vacuum. At time of FMS manufacture, the pressure-displacement characteristic of each particular diaphragm is measured and this information is bar-coded onto the FMS body. The fluidics module is able to read the barcode information and use it to accurately translate deflections into pressure/vacuum for that particular diaphragm.
- 7.5.5 Rotary Irrigation Valve - The rotary irrigation valve is a multi-positional valve that provides on/off control of irrigation and allows for shunting of air from the irrigation bag to the drain bag during replacement bag prime. The rotary type valves are zero displacement (reduced pressure transients), provide for accurate positional control, and are quiet to operate.
- 7.5.6 Irrigation Line - The irrigation line channels fluid from the FMS to the handpiece. It consists of non-DEHP PVC tubing which is .188" OD x .125" ID x 76" L (clear, no tint; OD-Outside Diameter; ID-Inside Diameter; L-Length). The distal end is terminated with a male luer connector that interfaces with the female luer connector of the handpiece irrigation port. A lock ring is provided to engage locking features on *Centurion** handpieces to ensure reliable connection. The lock ring can be slid out of the way for use with handpieces that do not support the locking feature.
- 7.5.7 Aspiration Line - The aspiration line channels fluid and aspirated material away from the handpiece to the FMS. It consists of non-DEHP PVC tubing which is .155" OD x .048" ID x 76" L (blue tint). The distal end is terminated with a female luer connector that interfaces with the male luer connector of the handpiece aspiration port. The small inner diameter of this aspiration tubing provides a high resistance to flow which significantly reduces post occlusion surge. Under normal conditions, post occlusion surge for *Centurion** Gravity and Active configurations is the same. The surge transient is of such short duration that active fluidics cannot respond fast enough to further reduce surge.
- 7.5.8 Aspiration Pressure Sensor - Fluid coming into the FMS from the aspiration line enters a chamber which is covered by the aspiration pressure sensor diaphragm. Similar to the Irrigation Pressure Sensor, changes in pressure within the chamber result in deflection of the diaphragm (convex for pressure and concave for vacuum). The Optical Pressure Sensor (OPS) within the fluidics module translates deflections of the diaphragm into corresponding changes in pressure or vacuum.
- 7.5.9 Rotary Vent Valve - The rotary vent valve allows for venting of vacuum in the aspiration line by opening the line to the vent/reflux reservoir which is at or near atmospheric pressure.
- 7.5.10 Dual Segment Pump - The system utilizes a dual segment pump that incorporates two *Infiniti** style pumps segments that are operated upon by a single pump head assembly. Both pump segments pull from a common aspiration path and result in twice the aspiration volume per rotation of the pump head. This high performance pumping system provides the flow capacity needed to overcome the significant resistance of the small bore (inner diameter) aspiration tubing. The system is configured such that small pulsations generated by the upper segment are out of phase with those created by the lower segment, resulting in waveform cancellation and extremely smooth flow.
- 7.5.11 2D Barcode - A 2D barcode is laser etched onto the FMS body at time of manufacture. This barcode contains calibration information (pressure-displacement) for the Irrigation Pressure Sensor and the Aspiration Pressure Sensor diaphragms. Additionally, the barcode contains FMS type (gravity or active) information, calibration station designation, and date/time code (down to the second). The date/time code together with

calibration station designation provides a type of serial number unique for any given FMS. The Optical Pressure Sensor is capable of reading all the barcode information.

- 7.5.12 Vent/Reflux Reservoir - This is a liquid reservoir within the FMS assembly that collects a volume of fluid from the discharge side of the pump segments. When the reservoir fills, excess fluid overflows into the drain bag. The reservoir is used as a source of fluid for venting and reflux.
- 7.5.13 Flow Paths - The overall fluid circuit is depicted schematically in [Figure 2-2](#) on page 2.3 while actual flow paths within the FMS assembly are shown in [Figure 2-9](#).

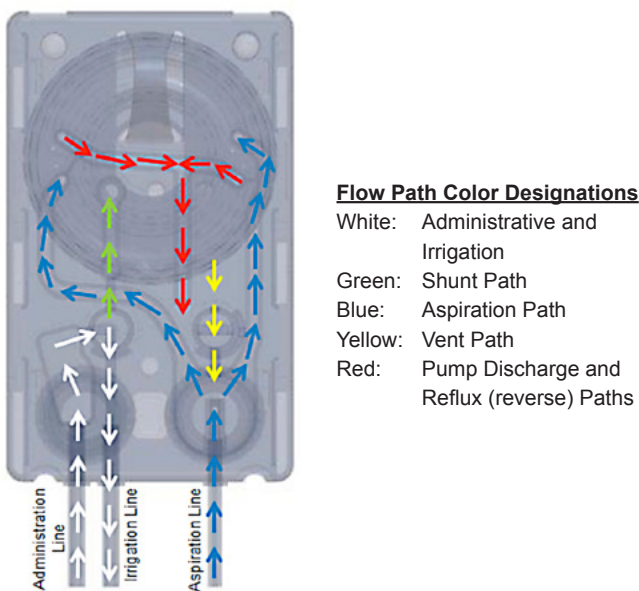


Figure 2-9 FMS Fluid Flow Paths

- 7.6 **Fluidics Module** - The fluidics module interfaces with the consumable FMS and provides fluidic control functionality. Module components are shown in [Figure 2-10](#).
- 7.6.1 **Clamp Mechanism** - The clamp mechanism engages the FMS to draw it into the fluidics module and ensure it is securely maintained in proper relationship with sensing and control elements. When the FMS is rotated into position, a photo interrupt sensor detects its presence. Upon FMS presence detection, the system attempts to detect the 2D barcode on the FMS body. Successful detection of the barcode will enable clamping. During clamping, six clamping tangs interface the FMS via slots in the perimeter and react against clamping surfaces on the backside of the FMS Base.
- 7.6.2 **Pump** - Pump head rollers act upon the FMS pump elastomer to generate flow. Rollers are individually spring loaded to ensure proper compression force to seal both upper and lower segments. A stepper motor is used to control pump head direction and speed. An encoder mounted to the back of the motor shaft verifies agreement between commanded and actual motion.
- 7.6.3 **Rotary Valve Drive** - Stepper motors are used to drive rotary valves for control of irrigation and vent. Valve drives are spring-loaded and are pushed back by the FMS during clamping. After clamping, the valve drives are slowly turned to allow drive bits to drop into corresponding valve plugs. Homing of both valves is accomplished by turning the valves in one direction until a hard stop is encountered (motor skips steps), then reversing direction and verifying a second hard stop the correct number of steps away.

- 7.6.4 Optical Pressure Sensor (OPS) - The optical pressure sensor assembly measures displacement of both irrigation and aspiration pressure sensor diaphragms. A beam of light from a laser is reflected off the diaphragm and back to a photo detector within the OPS assembly. Deflection of the diaphragm causes the reflected light to strike the detector at different locations. The system is calibrated to correlate position of the reflected beam with pressure acting on the diaphragm.
- 7.6.5 Eject Button - The eject button triggers a photo interrupt sensor resulting in unclamping of the FMS. Under normal power conditions the system will close both valves prior to unlatching. This minimizes leakage of liquid from the FMS during removal and disposal.
- 7.6.6 Fluidics PCB - Electronics controlling fluidics module functions are located on the Fluidics PCB.

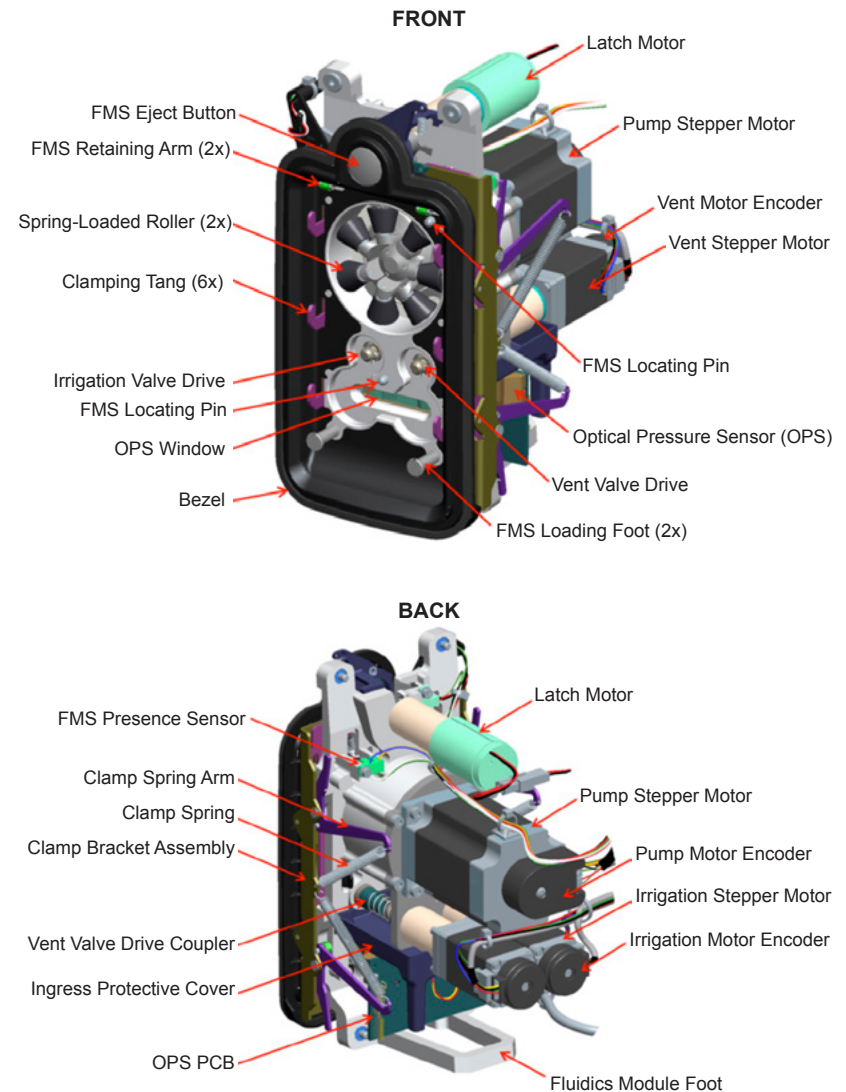


Figure 2-10 Fluidics Module Component Location

7.7 Active Irrigation (AI) Module

7.7.1 The active irrigation module compresses a flexible bag of irrigation solution between a stationary plate and a stepper motor controlled push plate to create and control pressure delivered to the surgical site. Module components are shown in *Figure 2-11*.

7.7.2 Base Casting - The AI base casting is a single piece aluminum casting that serves as a receptacle for the irrigation bag and a means of containment of liquid in the event of leakage from the bag. Duct work directs any leakage to the outside of the console. The wall of the base casting opposite the push plate serves as the stationary compression plate.

7.7.3 Sliding Cover - The sliding cover serves as a means of pinch protection. An optical interrupt sensor is used to detect the open or closed position of the cover. Drive assembly actuation is disabled when the cover is in the open position. There is a detent in the closed position requiring a small amount of force to overcome so as to reduce the chance of accidental opening. When the cover is manually opened during a procedure, a screen prompt is generated asking the user if they want to replace the bag. If answered in the affirmative, the push plate will retract to the home position, unloading the bag for removal. A magnet between the cover and push plate draw the cover open as the push plate retracts.

7.7.4 Bag Hanger - The bag hanger holds the irrigation bag to support spiking and to ensure the bag is properly located relative to the Bag ID Reader and Push Plate.

7.7.5 Push Plate & Drive Assembly - The push plate is used to compress the irrigation bag against a stationary wall of the AI base casting. The push plate is mounted to a linear ball screw assembly that is controlled via a stepper motor. A belt drive system is used to transfer torque from the motor to the linear ball screw assembly. An encoder attached to the back of the stepper motor is used to ensure that commanded rotation corresponds to actual rotation. When the push plate is retracted, a photo interrupt switch is used to establish home position.

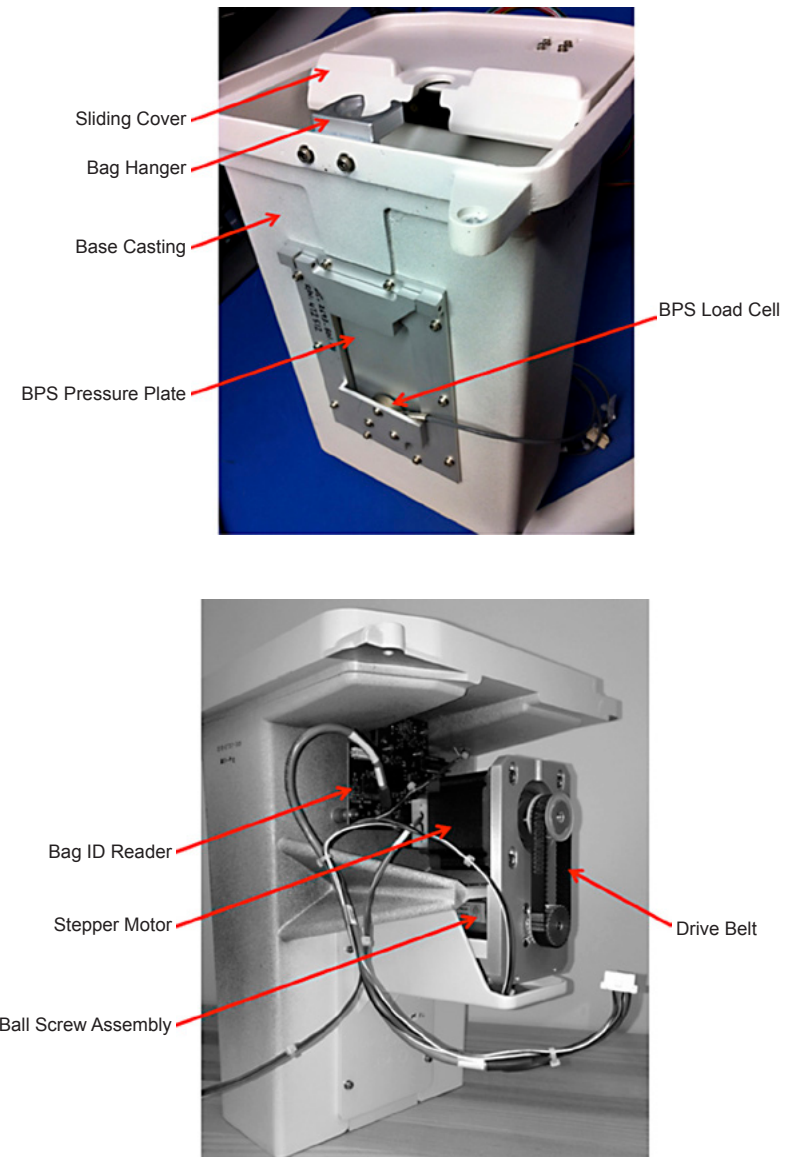


Figure 2-11 Active Irrigation (AI) Module Component Location

- 7.7.6 Bag ID Reader - The bag ID reader is a vision system mounted behind the push plate assembly that is able to identify valid irrigation bag types based on the presence and spacing of two ring features molded into the neck of the bag port.
- 7.7.7 Bag Pressure Sensor (BPS) - The bag pressure sensor is integrated into wall of the AI base cast that serves as the station compression plate. It consists of a hinged pressure plate that reacts against a load cell. When the irrigation bag is compressed between the push plate and the stationary wall, force is registered on the load cell in proportion to the pressure within the bag. A plastic sheet covering the BPS assembly prevents liquid ingress. The BPS is not used for primary control of irrigation pressure. Its purpose is to provide for redundant over-pressure mitigation. Hardware & software triggers put the system into a safe state if the BPS output ever exceeds 165 mmHg (corrected for PEL).
- 7.8 **Active Fluidics**
- 7.8.1 Active Fluidics refers to real-time management of pressure delivered to the anterior chamber. Traditional gravity-based systems provide constant pressure input based on IV pole height. Under zero flow conditions, the pressure delivered to the anterior chamber is equal to the full pressure generated by the fluid height. However, once flow is initiated, resistances in the irrigation path result in significant loss of pressure on the way to the eye.
- 7.8.2 With active fluidics, pressure is generated by the Active Irrigation module by squeezing the flexible irrigation solution bag. During operation, irrigation pressure is controlled in a closed loop manner via input from an Irrigation Pressure Sensor (IPS) within the FMS. The system estimates irrigation path pressure losses based on flow rate and fluid path resistance, then adjusts the pressure at the IPS to compensate for these losses in order to maintain downstream fluid pressure at the anterior chamber. This real time adjustment in response to changes in flow rate provides for more stable intraocular pressure (IOP) than can be achieved with gravity based systems.

8. PNEUMATICS (see *Figure 2-12*)

- 8.1 The Pneumatic Module provides modulated pressure to drive the Vitrectomy probe. It consists of an Air Source assembly, a Main Pneumatic Manifold assembly, and a Front Pneumatic Manifold assembly. It is controlled by MFIO PCB as well as the Fluidics PCB.

8.2 ELECTRICAL

- 8.2.1 The MFIO drives 3 ON/OFF 24V valves (Q3 to control the isolation valve, Q4 to control the vent valve, Q6 to control the pump isolation valve) and a 24V Brush DC pump (U13, Q2, Q5), and reads the pneumatics accumulator pressure (U20B), to control the pressure of the pneumatics accumulator.
- 8.2.2 The pump, uses a 0.5 ohm coil resistance motor, that if allowed, can draw 48 amps in the absence of any back EMF (motor not moving), either during pump startup, or in a stall condition. To limit the startup or stalled current of the pump to a value that when added to other current demands from the rest of the console, does not exceed the capacity of the power supply (about 31 Amps), a soft start circuit (U13, Q2) has been implemented to limit the maximum current to the pump to a value set by resistors R96 and R97. This maximum current is set to 20 ± 2 Amps, and Q2 chosen such that it can safely conduct the current needed, while dissipating up to 450 watts for periods of up to 0.8 seconds, at a low duty cycle. The timeout for U13, is set to a maximum value of 601 msec, using C158 and C159, considering all tolerances involved.
- 8.3 As a measure of redundancy, a low side switch (Q5) has been added, that under software control, can cut off the current to the pump. During normal operation, however, the pump start-up/shutdown is controlled by software, via the ENABLE pin of U13, to take advantage of the soft startup feature of U13, to limit the startup current that the power supply needs to provide, with Q5 being ON all the time (except in a failure mode, or when the module is put in a safe state).

- 8.3.1 The pump current, as well as all three valve currents are monitored and made available at ADC channels, to monitor the currents to detect any failures.

8.4 MECHANICAL

- 8.4.1 The Air Source assembly provides pressure to the Main Manifold assembly. It has a DC pump, a heat exchanger, and air filters. The DC pump has an intake air filter that does not need to be checked and serviced regularly.
- 8.4.2 The pump is installed on and supported by four vibration isolators. Since the isolator are soft and stretchable, a cage like sheet metal bracket is mounted around the pump motor so the pump is supported and its movement is restricted during shipping when the console is not up right.
- 8.4.3 The heat exchanger is a passive device for purpose of cooling down the compressed air from the pump. When the compressed air is cooled down, moisture content will condense out and be captured by the water separator/filter. The water separator/filter has a window for water level and an auto drain valve. When the water is full, the drain valve will open automatically to dump water out of the console through the console bottom drain hole. The other filter is for removing fine particles. These filters are not required to be checked and serviced regularly because the relative clean environment and infrequent use.
- 8.4.4 A noise block/absorbing baffle is installed at bottom of the console at the pump location which blocks the front and top side of the Air Source assembly. The back end of sound baffle is captured and supported by the catch of the frame.

8.4.5 The **Main Manifold** assembly primarily provides regulated pressure to the Front Manifold driving the Vitrectomy probe. It consists of pneumatic components such as check valve, solenoid valves, over pressure relief valve, air pressure sensor, quick connect/disconnect fittings, mufflers, and an air reservoir.

- The Check Valve prevents back flow from Main Manifold assembly to Air Source assembly at the start of charging when pressure in Air Source assembly is not yet high enough.
- The Over Pressure Relief Valve (RV1) is a spring operated mechanical safety device. It opens to relieve pressure in an over pressure condition. It has a set pressure of 61 to 64 PSI.
- The Pump Vent Valve (SV1) is a solenoid valve. When OFF, it vents the Air Source assembly; when ON it allows charging of the Main Manifold assembly. During Vitrectomy in low cut rates, it turns on and off as needed to regulate the air tank pressure so it won't go beyond its maximum pressure.
- The Air Tank or Reservoir is made of die cast aluminum. To mitigate the potential risk of the stored pneumatic energy, its mounting hardware is sealed or covered with epoxy for preventing accidental dismount or tampering.
- The Spare Port (SP) is for testing and future expansion.
- The Air Tank Vent Control (SV2) is a solenoid valve. When OFF, it vents the air tank; when ON, it closes.
- The Air Tank Pressure Sensor (SENS1) is a pressure transducer for controlling and monitoring pressure of the Air Tank.
- The Isolation Valve (SV3) is a high flow solenoid valve. When OFF, it vents the Front Manifold assembly and isolates the Main Manifold assembly from Front Manifold assembly; when ON, it supplies pressure to Front Manifold assembly.

8.4.6 The **Front Manifold** assembly provides modulated pneumatic output pressure to the Vitrectomy probe which actuates the Vitrectomy probe at controlled cutting rates and duty cycles.

- The Vit Probe Drive Valve (SV4) is a high speed solenoid valve. It switches the pressure supply between the two output channels which drives the Vit probe to alternating open and close positions i.e. cutting. To suppress noise, a rubber cap made of thermal conductive material is snugly fitted over the valve. Calibration of this valve is required as the console is manufactured. The purpose of the calibration is to balance the pressure in the two output channels to ensure the Vitrectomy probe fully opens and closes. Calibration is accomplished through electronic duty cycle adjustment.
- The Output Channel Differential Pressure Sensor (SENS2) monitors the pressure in the two output channels. It can detect if one or both pneumatic connectors are not connected when initiating Vitrectomy.
- The two Output Fittings (J6 and J7) are made of metal. Their sleeves are made of black and clear anodized (silver color) aluminum. The size of the opening of these two fittings are different and both fittings are female type. Therefore, the connection of the two Centurion UltraVit probe connectors are not interchangeable and it is incompatible with any other Vitrectomy probe.
- The exhaust line of the Front Manifold assembly is connected to Muffler (MF4) on Main Manifold assembly. This is for noise suppression and is tuned for specific back up pressure which is important for performance of the system.

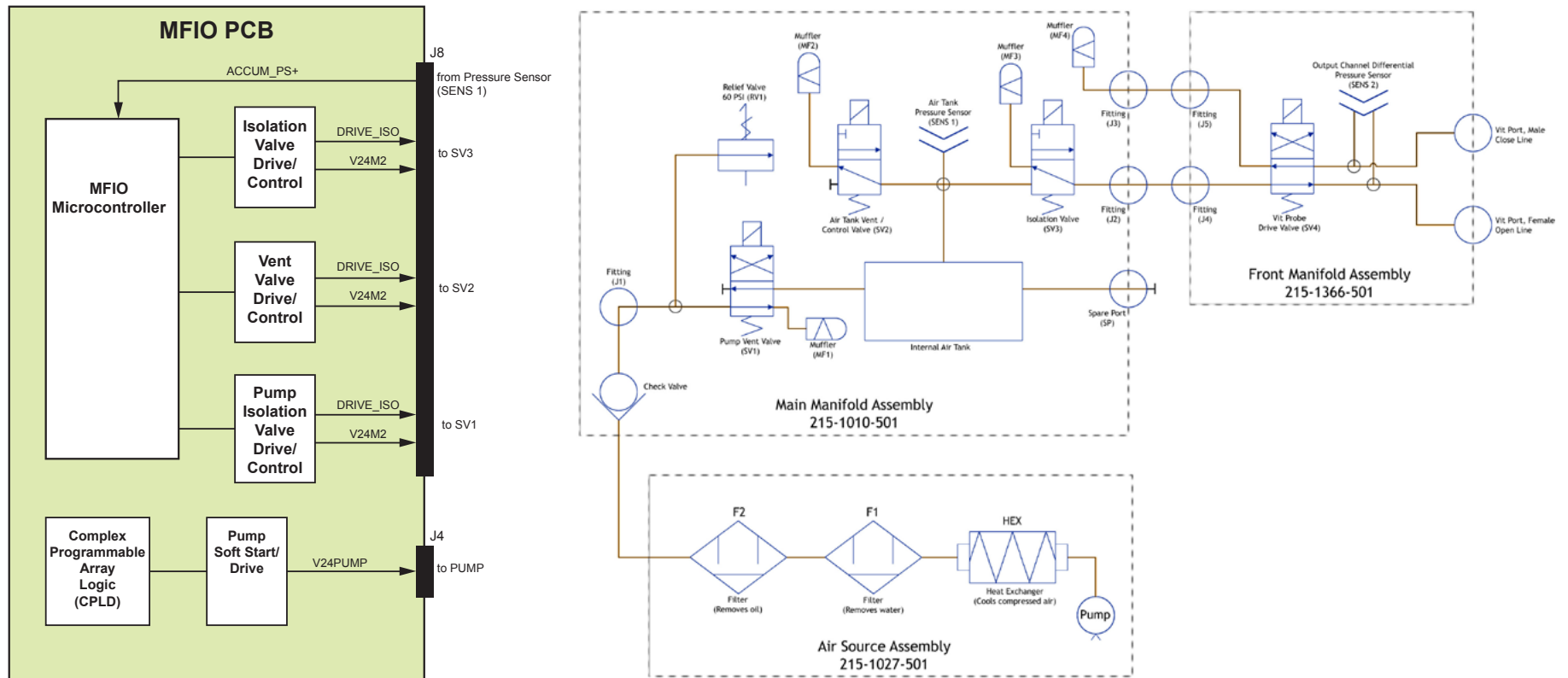


Figure 2-12 Pneumatic Block Diagram

9. CAUTERY (see [Figure 2-13](#))

9.1 Cautery Switching Amplifier - The cautery switching power amplifier can provide up to 10 watts of power at 1.5 MHz. The amplifier is controlled by the Fluidic microprocessor and the CPLD (Complex Programmable Logic Device). The MOSFET Driver (U77) output is connected to the center tap of the power transformer (T1) through the analog power switch (Q40, Q41). The remaining two inputs of the power transformer are alternately pulled to ground by the power MOSFET. The T1 output is converted to a sine wave through a band pass filter network.

9.2 Cautery Driver - The cautery driver is a proportional bipolar high frequency coagulator. It contains all of the electrical circuits necessary to supply energy to electrosurgical cautery probes for the purpose of coagulating vessels and other soft tissues. Probe voltage adjustment is controlled by the microprocessor.

A power control loop is used to control the power delivered to the probe. The power control loop monitors and maintains the appropriate probe drive power. The cautery driver contains the circuitry to create 1.5 MHz sinusoidal drive voltage and frequency with analog feedback to close the loop. The cautery driver digitizes and processes this feedback to provide a continuous tracking digital control loop.

The cautery driver also contains various circuitries to detect fault conditions and to disable power output. The Fluidics PCB then communicates this fault to the Host.

9.3 Cautery Voltage and Current Feedback- As previously stated, the cautery subsystem utilizes a power control loop to control the power delivered to the probe.

9.4 Probe voltage feedback is measured on the secondary of power transformer T1, and is related to the actual handpiece voltage by the turns ratio of transformer T2. This voltage is scaled to appropriate levels by scaling amplifier U82A. The scaled AC probe voltage is then passed to RMS/DC converter U83, which converts the RMS value of the AC voltage to an equivalent DC level.

9.5 Probe current feedback is measured on the secondary of power transformer T1, and is related to the actual handpiece current by the turn ratio of transformer T3. This current is scaled to appropriate levels by scaling amplifier U82B. The scaled AC handpiece current is then passed to RMS/DC converter U86, which converts the RMS value of the AC voltage to an equivalent DC level.

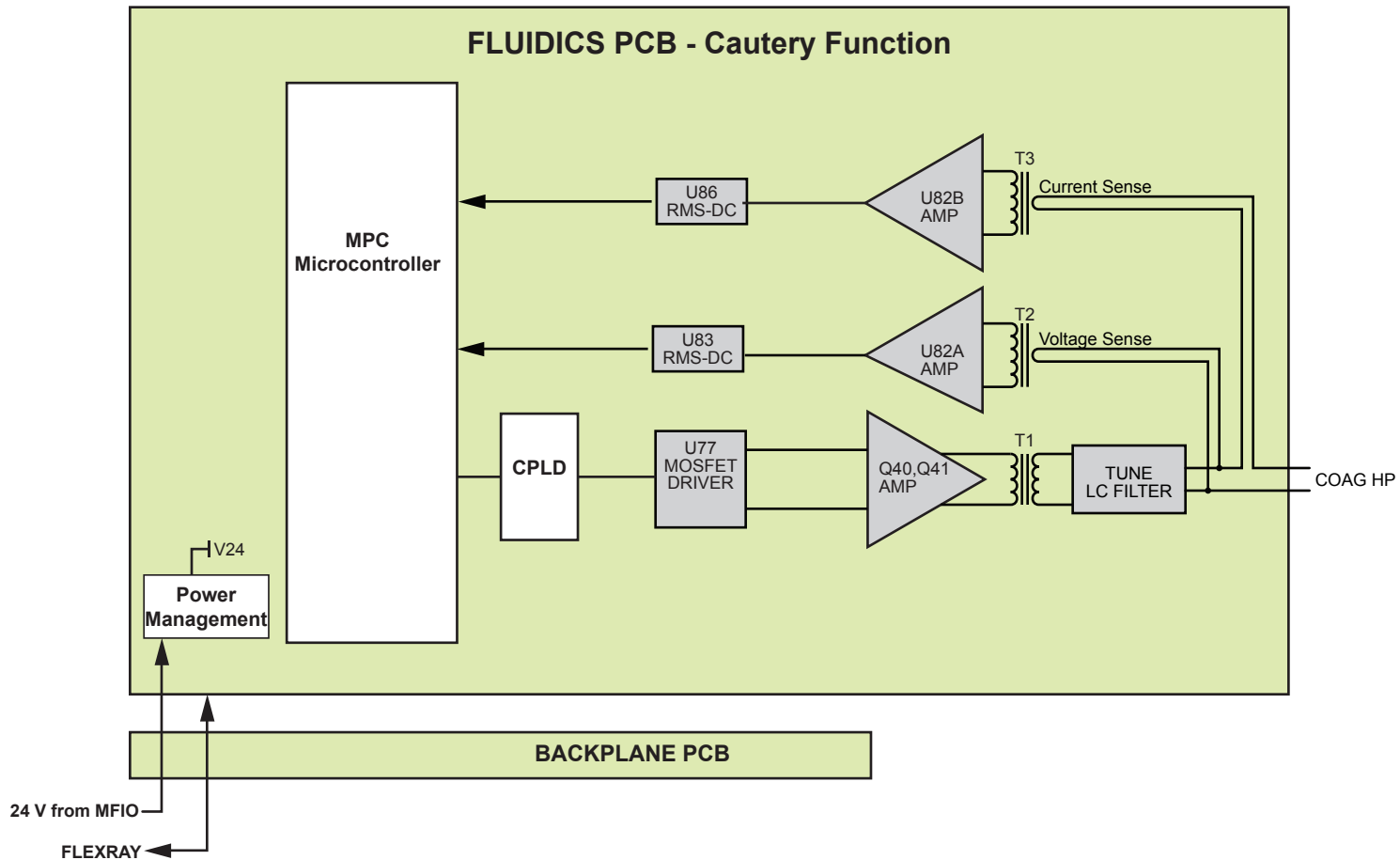


Figure 2-13 Cautery Block Diagram

10. IV POLE (see *Figure 2-14*)

- 10.1 The MFIO PCB generates the signals to drive the IV Pole Motor. The Motor assembly incorporates a parking brake that the MFIO PCB signals to trigger its release (the brake holds the IV Pole in position when not energized). The Motor and Brake assembly is responsible for all actuation aspects of the IV Pole.
- 10.2 Position Feedback - The Motor Assembly contains three Hall sensors that are sent to the MFIO PCB and used to determine the position of the IV Pole. The resulting resolution is 0.63336 mm per quadrature count.
- 10.3 Two optical sensors are used on the load side (after the belt), to detect a failure in the mechanical assembly (including the belt) that results in the IV Pole not moving even though the motor runs as commanded. These two sensors, arranged in a quadrature fashion, also provide a rough measure of the IV Pole position that must agree with the position derived from the Hall sensors to within the resolution and accuracy of the sensors (the Hall sensors are the primary position sensors). The optical sensors yield a travel resolution of 0.791905 mm per quadrature count.
- 10.4 Brushless DC Motor Control - The brushless DC motor is controlled by the Motor Controller that accepts Hall sensor feedback for commutation of the brushless DC motor, and directly drives the motor in the IV Pole. The Motor Controller is controlled using 3 signals from the MFIO Microcontroller under software control. These signals are FWD/REV, Brake* and ENABLE. A 50% duty cycle signal on the FWD/REV causes the motor to come to a stop. Duty cycles greater or less than 50% move the IV Pole up or down, depending on the duty cycle.
- 10.5 Mechanical Brake - When the IV Pole is required to be stationary, a mechanical brake is activated, under software control, to ensure that the IV Pole does not move. The brake is engaged with no current flowing through the brake solenoid, and is disengaged, allowing motion of the IV Pole, when 24V is applied across the brake solenoid via Q10.
- 10.6 Home Switch - An optical switch is used as a home position switch to calibrate the IV Pole position at power up.
- 10.7 MECHANICAL - Pulley 1 is connected to the Motor drive shaft which actuates the Belt which in turn drives Pulley 2. Pulley 2 serves two functions: impart rotation of the Lead Screw and, when coupled with the Pulley Sensors, it serves as a quadrature encoder to provide position feedback to the MFIO. The Pulley Sensors are fastened to the IV Pole base through the Pulley Sensor Mount.
- 10.8 The Lead Screw is balanced by Lower and Upper Bearings. The Lower Bearings are radial bearings which are housed in the Motor Mount bracket. The Upper Bearing is housed within the pole and interfaces with the inner diameter of the pole. The motor mount is equipped with a setscrew which serves to offset the motor and thus allow for belt tension adjustment.
- 10.9 Lead Screw rotation is converted into vertical linear translation by the Nut. Rotation of the Nut is prevented by housing the Nut in the Nut Carrier. The Nut Carrier is constrained from rotating and slides along the base as the nut translates. Vertical translation of the Nut and Nut Carrier is imparted to the pole by interfacing the pole to the Nut Carrier.
- 10.10 The Home position, or lowest position, of the pole is established by a Sensor Flag that is attached to the Nut Carrier. The Sensor Flag interacts with a Home Sensor which is in communication with the MFIO PCB.

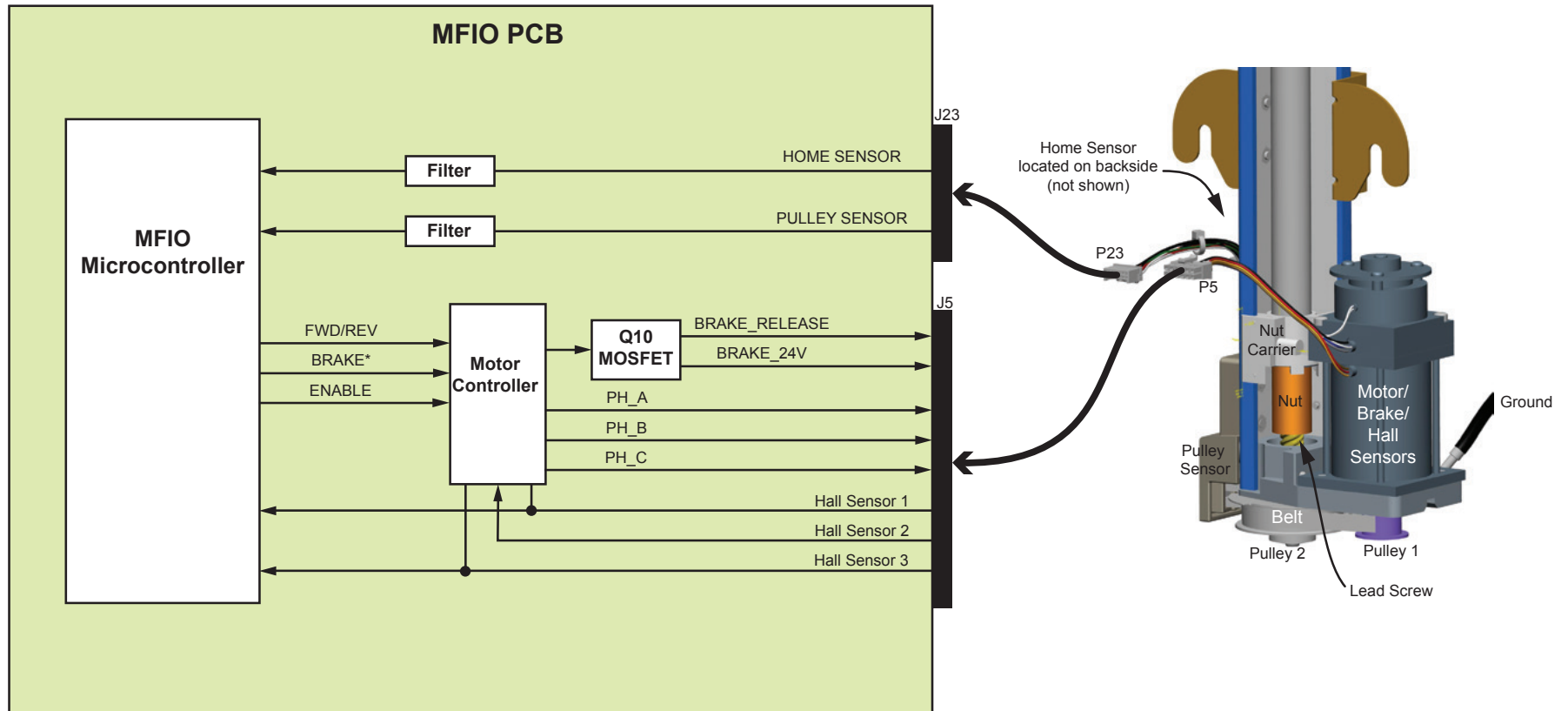


Figure 2-14 IV Pole Block Diagram

11. PEL (PATIENT EYE LEVEL) PANEL (see *Figure 2-15*)

- 11.1 The PEL Panel provides visual feedback for the current PEL setting on the system. The primary components of the PEL Panel consist of a PCB that houses the functional electronics, and molded plastic components that embody the assembly. Left and Right PEL Panels are symmetric and are assembled on either side of the console. Figure 2-11 a block diagram of the PEL interface with the system.
- 11.2 The user can change the PEL setting through Display GUI (Graphical User Interface) or the Remote Control. When the user selects a PEL setting from CVS GUI:
 - The signal is processed at the Host module and is transmitted to the PEL PCB through the MFIO PCB.
 - The LED driver on PEL PCB lights up the appropriate LED based on input.
- 11.3 When the user selects a PEL setting from the Remote Control:
 - The signal is received by IR receiver on PEL PCB then is transmitted to the Host Module through the MFIO PCB.
 - The signal then is processed at the Host Module and is transmitted to the PEL PCB through the MFIO PCB.
 - The LED driver on PEL PCB lights up the appropriate LED based on input.

12. REMOTE CONTROL (INFRARED) (see *Figure 2-15*)

- 12.1 The Remote Control is the secondary user interface for system. The Primary components of the Remote Control Assembly are a PCB that houses the functional electronics, molded enclosures that embody the assembly, and a battery door that provides user access to the batteries. The Remote Control is powered by two AA batteries that are intended to provide power for a minimum of 350 procedures of typical remote control usage. Figure 2-11 a block diagram of the Remote Control interface with the system.

- 12.2 When the user depresses a key on the elastomeric keypad a signal is generated that is translated into Infrared (IR) digital signals, and transmitted out the front side of the remote assembly. The IR receivers and supporting electronics in the PEL module receive and interpret these keyboard signals codes and provide the signal to adjust the desired parameters on the system.
- 12.3 **KEYPAD ACTIVATION** - When a user applies force on a given key, the elastomeric material deflects and applies pressure on the metallic snap dome mounted on the PCB. When a sufficient force is applied, the snap dome contacts a series of parallel traces on the PCB. This contact closes a circuit on the PCB that sends a signal to the microprocessor. Each key has a dedicated circuit so that the microprocessor can detect which key had been depressed.
- 12.4 An accelerometer is used to disable transmission of a signal in the event of a dropped remote control. The accelerometer will also enable transmission of a signal when the remote control orientation is +/- 30 degrees planar to the ground with the buttons facing up.
- 12.5 **SIGNAL PROCESSING** - When a signal arrives from one of the keypad circuits, the microprocessor receives the signal and uses the software algorithm stored in the flash RAM to send a unique coded signal to the IR Transmitters mounted on the front edge of the PCB.
- 12.6 **IR TRANSMISSION** - The IR Transmitting LED's emit an infrared digital code that is unique for each key depression. This signal passes through the IR-transparent material of the front housing and is received and processed by the console.

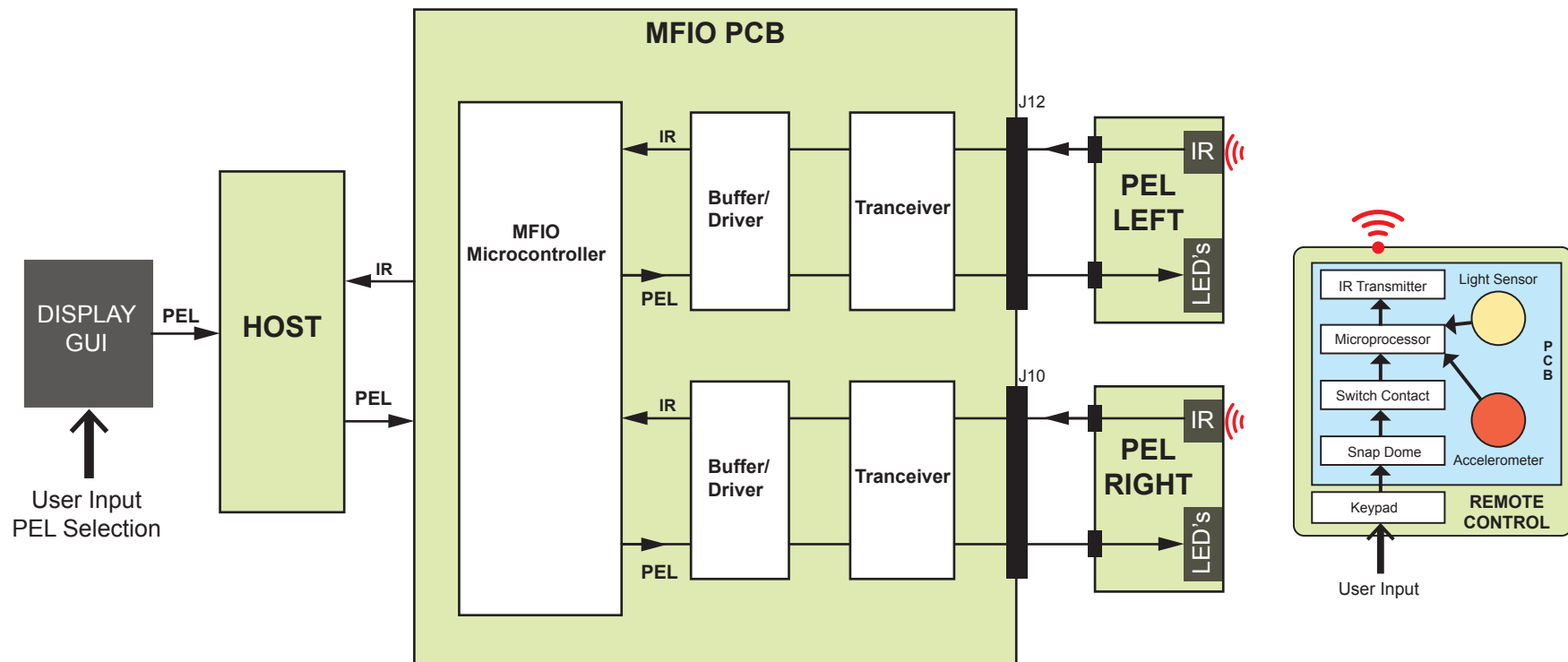


Figure 2-15 PEL Panel / Remote Control Block Diagram

- 12.7 **ILLUMINATION** - The Remote Control keys are illuminated during low light conditions. Blue LED's on the PCB are located beneath semi-translucent sections of each key on the keypad. When active, the light from the energized LED's provide illumination to the appropriate keys. Keypad illumination can be triggered either manually or automatically.

Manual illumination occurs when the user depresses and holds one of the keys for longer than five seconds. In this case the held key activates a momentary switch mounted on the PCB. This switch completes a circuit that sends a signal to the microprocessor which in turn listens for five seconds before energizing the LED's located beneath each key.

Automatic activation of the illumination is triggered by a photo-detector mounted on the top side of the PCB. Light is allowed to penetrate through a window in the front housing directly above the photo-detector. When both the detected light level falls beneath the given threshold, and any key is depressed or vibration is detected via the on-board accelerometer, the microprocessor completes a circuit and the LED's are energized. The low-light condition is approximated as the light present on the deployed tray by only the LCD monitor while in a dark room. Backlighting will only be activated if the remote control orientation is +/- 30 degrees planar to the ground with the buttons facing up. These controls are intended to prolong battery life.

- 12.8 **REMOTE CONTROL CHANNEL SELECTION** - The remote control can be configured to operate on one of six channels. This feature allows six remote controls to independently control six *Centurion** consoles operating in the same room or area. Remote controls are factory preset to channel A. For proper remote operation, the console must be set to the same channel as the remote.

13. WIRELESS FOOTSWITCH

- 13.1 The Footswitch is a foot control device that communicates user input to the Centurion console. The footswitch accommodates a wide range of user ergonomics without adjustment and can be used with either foot. The major external components of the footswitch are the housing, treadle, home switch, wing switches, handle, console connector and base. The major internal components of the footswitch are return spring assembly, treadle, inductive charging coil, detent and encoder assembly, PCBA, antenna and LED indicators.

13.2 FOOTSWITCH ASSEMBLY

- 13.3 **HOUSING** - The housing is constructed of aluminum and comprises the majority of the footswitch mechanical structure. The external surfaces of the housing are coated with enamel to protect from wear and corrosion. The housing is designed to conform to IPX8 water tightness.
- 13.4 **SIDE SWITCHES** - There are four side switches on the footswitch, one horizontal and one vertical switch on each side. The side switch pivot assemblies mount from the inside of the housing and seal against the inner surface. The side switch mechanisms mount to the pivot assemblies with a shoulder screw and pivot vertically to actuate the vertical switches and slide horizontally to actuate the horizontal switches. Side switch covers mount from outside the housing, and are serviceable using standard tools without opening the footswitch.
- 13.5 **CONSOLE CONNECTOR** - A console cable connector is provided to allow wired operation and charging of the footswitch. The connector is located beneath a watertight plastic plug, and has keying features to align pins in this connector with corresponding pins in the cable plug.
- 13.6 **BASE** - The base and heel are constructed of polycarbonate/silicone composite plastic overmolded with thermoplastic urethane. The base incorporates a low-durometer silicone gasket for conforming to IPX8 water ingress requirements. The base also houses two of the four adjustable-height, spring-loaded plastic plungers used to facilitate footswitch positioning underfoot.

- 13.7 **RETURN SPRING** - The return spring assembly is comprised of an aluminum support block, spring plungers, spring arm, and two return springs. The plungers depress a switch on the underside of the spring block to indicate to the system that both springs are intact.
- 13.8 **HOME SWITCH** - The home switch is located beneath the rear of the treadle and serves both as the mechanical stop for the treadle and as an indicator when the treadle is up. It incorporates 5 redundant popple-dome switches with independent switch inputs to the microcontroller and digital I/O monitoring of state.
- 13.9 **TREADLE** - The treadle is constructed of aluminum and is connected on one side to the spring return mechanism and on the other side to the detent/encoder assembly via stainless steel axles. The stainless steel axles are mounted to sealed cartridge bearings housed in stainless steel bearing pillow blocks.
- 13.10 **INDUCTIVE CHARGING COIL** - The inductive charging coil is essentially the secondary winding of an air-core transformer (the primary is on the Footswitch Charger PCB mounted inside of the console lower rear panel). The charging coil provides for wirelessly charging the footswitch battery whenever the footswitch is hung or "cradled" on the console hooks.
- 13.11 **DETENT/ENCODER ASSEMBLY** - The detent/encoder assembly is connected to the treadle axle with a 4:1 miter/bevel gear that turns the rotation of the treadle 90 degrees to allow the assembly to mount next to the treadle. The miter/bevel gear pinion is assembled to the gearhead output shaft of the motor and increases the ratio to 25.2:1 or 3/4 of a turn at the motor spindle / back-shaft. A 12-bit absolute magnetic encoder is attached to the back-shaft of the motor and measures the mechanically-amplified rotation of the treadle, indicating absolute treadle position to the system.
- 13.12 The motor is intermittently engaged at user-specified locations of the treadle range to indicate transitions from different functional regions. Motor torque is developed by a current-controlled driving circuit that can be modified in amplitude as

well as time ON and time OFF. The footswitch microprocessor creates the "detent" effect - at a strength as selected by the user - by producing a train of pulses as appropriate.

- 13.13 **PROCESSOR PCB** - The Footswitch Processor PCB accepts either 24 V from the console cable or 6-8 V from the footswitch battery, and uses high efficiency DC/DC converters to produce supply voltages as needed to supply circuit blocks shown in Figure 2-12.

The processor is the STM32F105VCT7 ARM 32-bit Cortex-M3, which has integrated most circuitry needed to interface with all Footswitch PCB signals. The processor communicates with the "ZigBee" 802.15.4 radio modem via one of its UART channels.

- 13.14 **ANTENNA** - The footswitch uses a circularly-polarized patch antenna communicating in the 2.4 GHz spectrum related to the ZigBee protocol. The antenna has been tuned for use in the *Centurion** footswitch both in patch shape and with matching components to shift it's frequency to the center of the band to maximize performance across wireless channels.
- 13.15 **BATTERY** - The footswitch battery pack consists of four Lithium-Ion cells configured in a 2S2P configuration with a nominal pack voltage of 7.4 V. The pack has integrated fuel gauge with resettable primary and non-resettable secondary protection circuits. The pack is protected against over/under voltage, over-current, and over-temperature conditions. The fuel gauge stores and reports any faults to the microprocessor. The fuel gauge also tracks cell-aging of the battery and adjusts relative charge levels accordingly.

In order to improve service life of the battery, the overall capacity of the battery is over specified to account for natural cell aging. Additionally, charge and discharge rates are kept well under overstress conditions of the battery. Battery charging is terminated at approximately 75%, and the battery is considered low at 40%. Footswitch functionality is cut off when the battery reaches 10%.

13.16 FOOTSWITCH OPERATION

- 13.17 WIRED OPERATION - The footswitch disables wireless operation when communicating over the cable, which is via CAN 2.0 protocol. The footswitch can run directly off cable power, to cover for a missing or non-functional battery. Two footswitches can be charged simultaneously on the centurion console; one wired and one wireless.
- 13.18 When the footswitch is unplugged, it will switch to wireless mode provided there is sufficient battery power and wireless operation is enabled via the appropriate console screen. Wireless communication parameters are transferred via cable, in anticipation of the switch to wireless. The footswitch will wait for a valid console beacon before initiating wireless communication with these parameters.
- 13.19 While cabled, the footswitch can be issued a variety of diagnostic commands. These commands include detailed battery information and EEPROM fault/advisories downloads. Footswitch firmware can also be upgraded through the cable interface - the radio modem is programmed first (as required), followed by the microcontroller application code download.
- 13.20 WIRELESS OPERATION - The Alcon Telemetry Network is a console managed real-time communication protocol based on the IEEE 802.15.4a standard. A network consists of a console (network manager), a footswitch, and may include other listening devices.
- Wireless footswitch communication starts with the footswitch becoming "paired" to a particular console. This can occur when the footswitch is either cabled to the console or "cradled" on the hooks at the rear of the console. There can only be a 1:1 correspondence of consoles and footswitches - therefore, whenever a new footswitch is paired to a console, any previously-paired footswitch is released and thus is no longer in communication with that console.
- A communication "beacon" from the console synchronizes communication from the wireless footswitch. The beacon is

emitted every 40 ms, and when the footswitch is active, it will transmit six times following each beacon at approximately 5 ms spacings.

With treadle up and no switches pressed, the footswitch will transition to a "doze/awake" pattern whereby it will go to sleep for 10 seconds and then briefly "check in" with the console before returning to sleep, which helps conserve battery energy. If the console is turned OFF and thus the beacon ceases for more than 15 minutes, the footswitch will go to sleep and not "wake up" until the treadle or a switch is pressed.

- 13.21 INDUCTIVE PAIRING - Inductive or "wireless" pairing begins with the triggering of the infrared proximity detector which is located behind the smoked black plastic window on the console rear skin. Whether the console is turned ON or OFF, it will respond to the proximity detection signal and turn ON its charge coil, which will oscillate at fixed 115 kHz for up to 300 ms, then repeat every second up to seven times.

If the footswitch is present and able to detect the 115kHz magnetic burst (i.e. - if the air gap and coil alignment are such that good magnetic coupling is achieved between console and footswitch), the footswitch circuitry will typically begin shorting its coil in an ON/OFF pattern, as needed to convey its status reply to the console. This message is 125 bits at 5 ms per bit, for a total of 625 ms; 14 8-bit bytes with a "0" bit inserted between each to ensure adequate power in case of a completely dead battery.

During the pairing process, network identifiers, operational channel, and other pertinent information is passed to the footswitch as it very briefly uses the radio modem interface. Once pairing is complete, wireless communication is silenced and charge status is all that is reported via inductive communication, which helps keep the wireless environment free of unnecessary clutter.

- 13.22 INDUCTIVE CHARGING - The footswitch inductive charger is rated at 10 W, but in the present arrangement (10-12 mm air gap between coil faces) the power ranges from 3-4 W. The magnetic field generated by the console is nearly sinusoidal,

and oscillates at 50 kHz when charging. Charging is silent - there is no buzzing or other sound evident when charging is underway.

Whenever charging is in progress, the footswitch microprocessor continuously monitors coil voltage and current, and employs specialized hardware and a charging algorithm to optimize the energy transfer between console and footswitch. Efficiencies in the 60-70% range are typical.

Inductive charging actually starts with inductive pairing, and therefore is initiated by hanging the footswitch on the console footswitch storage hooks - inductive communication and charging are only enabled when in the vertical storage position. If the console does not get a response from the footswitch, it will cease attempts to inductively pair, and will wait for proximity switch indication of footswitch removal and return before trying again.

Once pairing is completed and charging is underway, the console will attempt to transfer the full 10 W rated power, but the actual level will vary depending upon the quality of the magnetic coupling (air gap, offset, etc.) and to a lesser degree on the charge level of the footswitch battery.

Every 10 seconds, the console turns off 50kHz/10W charging and then switches to the 115kHz/2W level used in pairing. The footswitch will detect this "query" signal as the start of its update interval, in which it communicates battery charge status back to the console, in essentially the same manner as pairing was established. Following this approximately 800 ms charge status communication interval, the console returns to 50 kHz/10 W charging. This cycle repeats until charging is complete.

13.23 LED INDICATION -

- **Communication** - The communication indicator is located at lower-left on the footswitch (when in normal upright position), and is accompanied by a wireless icon on the housing. It is used to indicate when connectivity has been established with the console - whether via cable or radio. The LED lights blue whenever communication is occurring with a console. It lights solid whenever cabled, or when

operating wirelessly and treadle is depressed. In wireless mode, and five seconds after treadle or sideswitch release, the LED is extinguished as the footswitch leaves active mode and enters sleep.

- **Power Status** - The power status indicator is located at lower-right on the footswitch (when in normal upright position), and is accompanied by a battery icon on the housing. It is used to indicate charge level, charge status, and inductive communication activity. The LED indicates a number of conditions, via one of two colors and either blinking or solidly lit. Most of the time, it will be lit green and will be continuously ON if cabled, or blinking if cradled and the footswitch battery is charging (it is solidly lit if cradled and battery is fully charged). The blink rate is 1 second ON/1 second OFF, but during the footswitch status interval every 10 seconds, the ON time is extended to 3 second (i.e. - one of the 1 second OFF intervals is skipped).

13.24 **POWER MANAGEMENT** - In order to maximize battery charge and increase battery service life, the footswitch aggressively manages power consumption by turning on and off circuitry that is not required. An advanced state machine is used to manage the various power states detailed in the following table.

Power State	Description
Active	When communicating with console, charging, and periodic status checks during sleep mode
Sleep	After timeout, for power saving
Shipping	For transport and after user reset (recovery from ship mode requires application of wireless/cabled power).

13.25 **STORAGE** - In storage mode, the footswitch disables all footswitch functionality and enters a state of minimal power consumption (ship mode). This state is entered on a battery less than 10% charged (and no cable power), on a fault condition, or whenever the "hard reset" pushbutton on the bottom center of the footswitch is pressed. When in storage mode, the footswitch will not respond to any treadle movement or side switch press. To exit this state, external power must be applied, either via cable or by cradling.

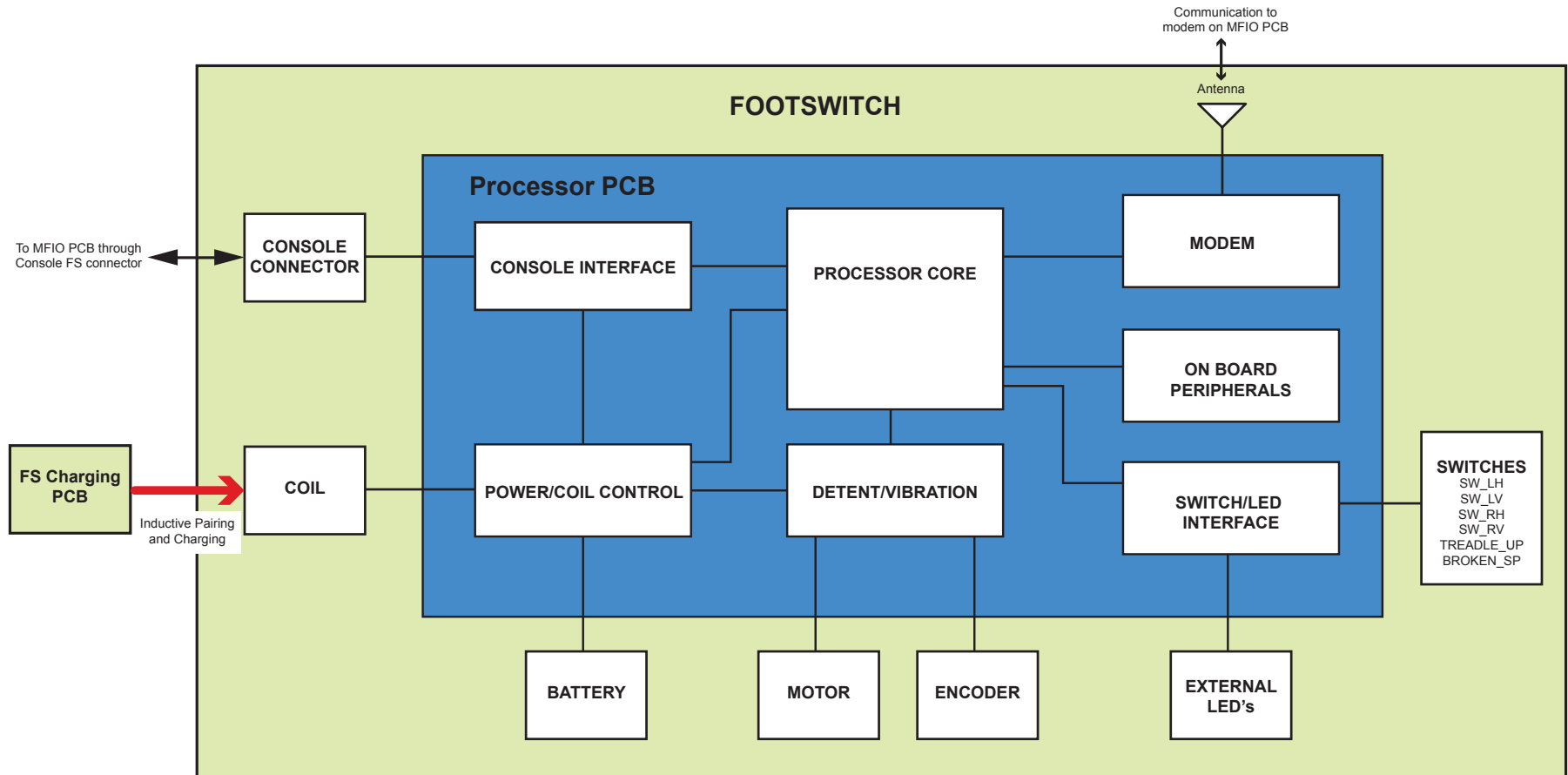


Figure 2-16 Footswitch Block Diagram

SECTION THREE - PARTS LOCATION AND DISASSEMBLY

OUTER PANEL LOCATIONS - See *Figure 3-1*.

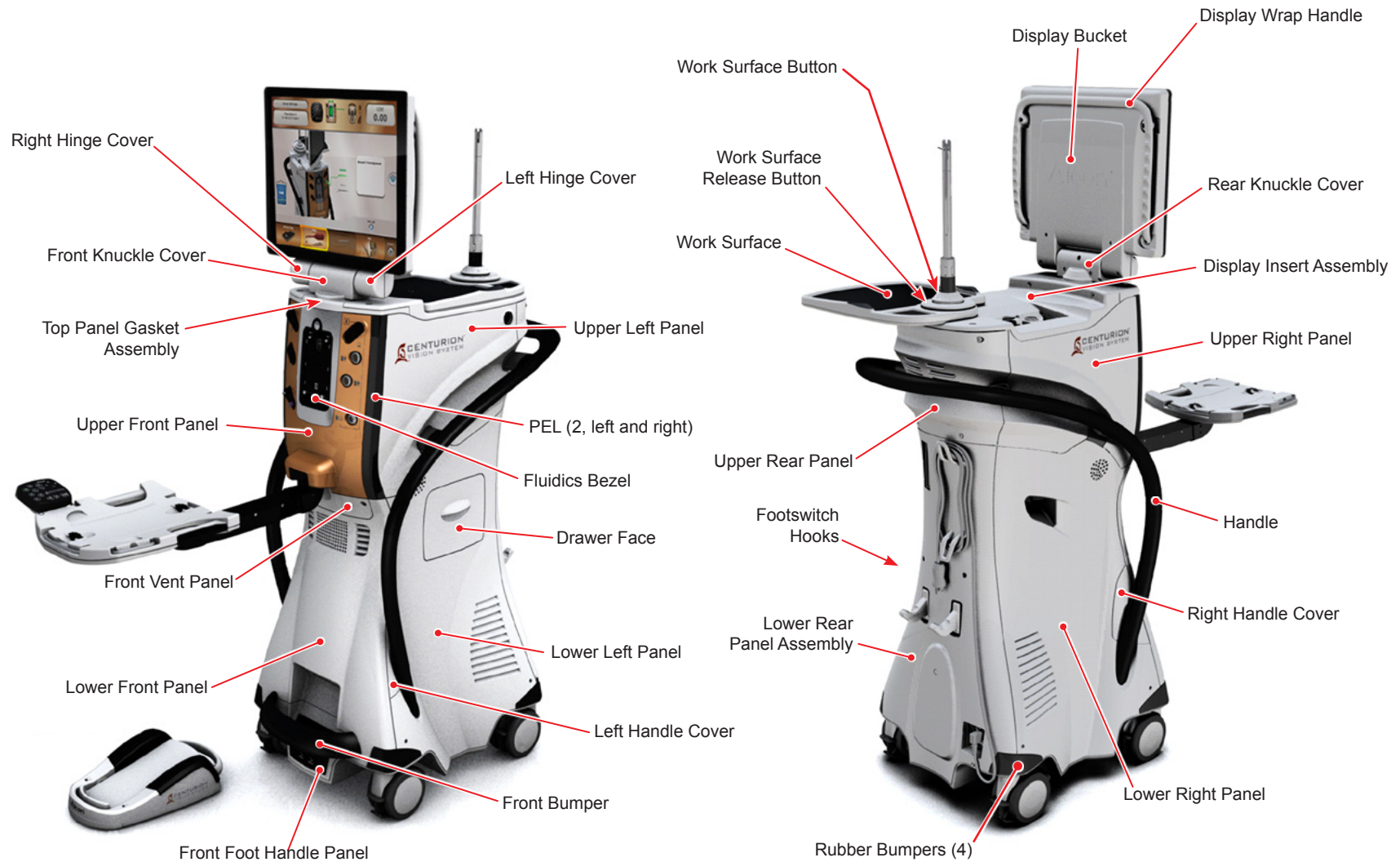


Figure 3-1 Outer Panel Location Diagram

COMPONENT LOCATION DIAGRAM - See [Figure 3-2](#)

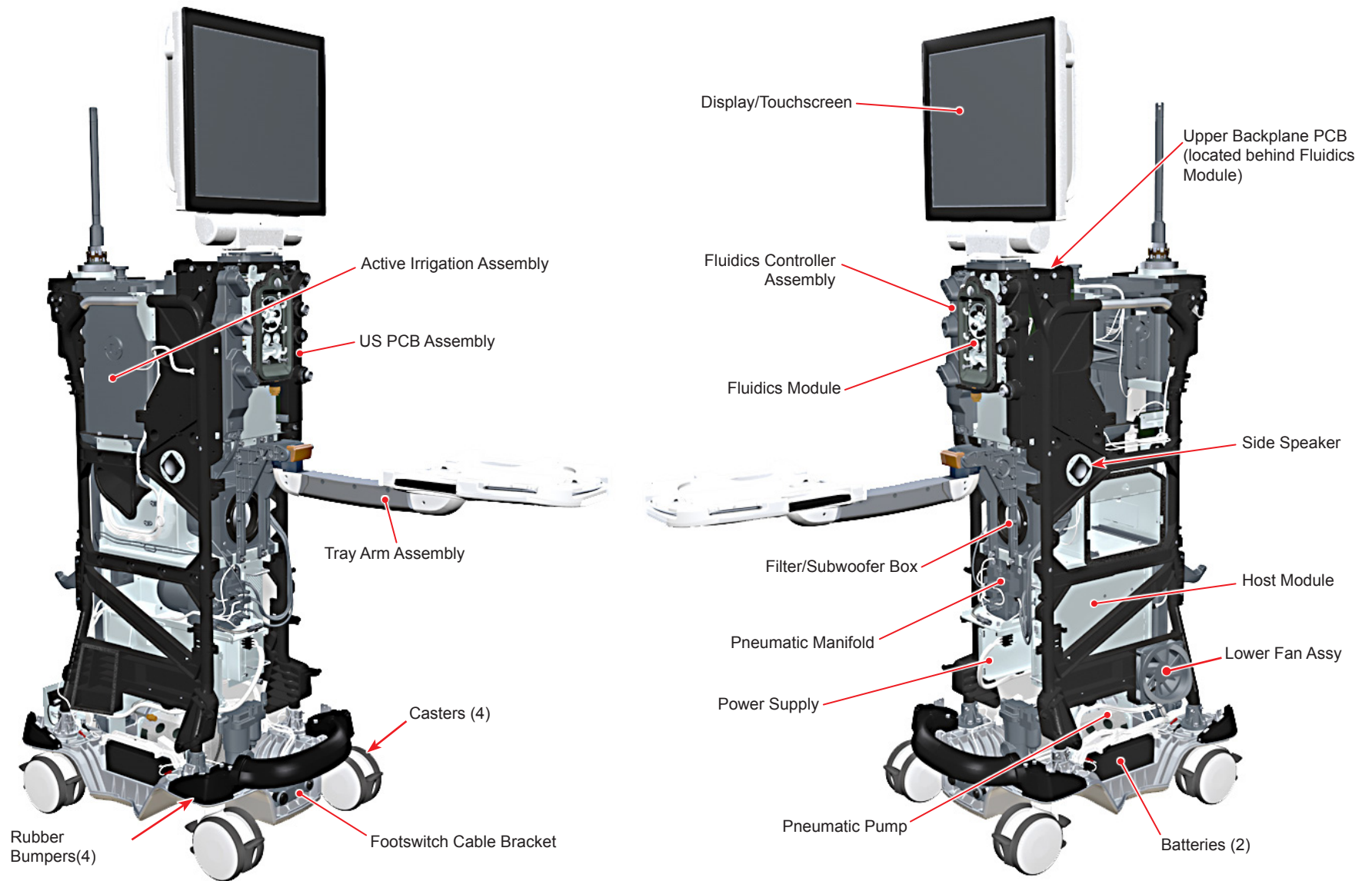


Figure 3-2 Component Location Diagram

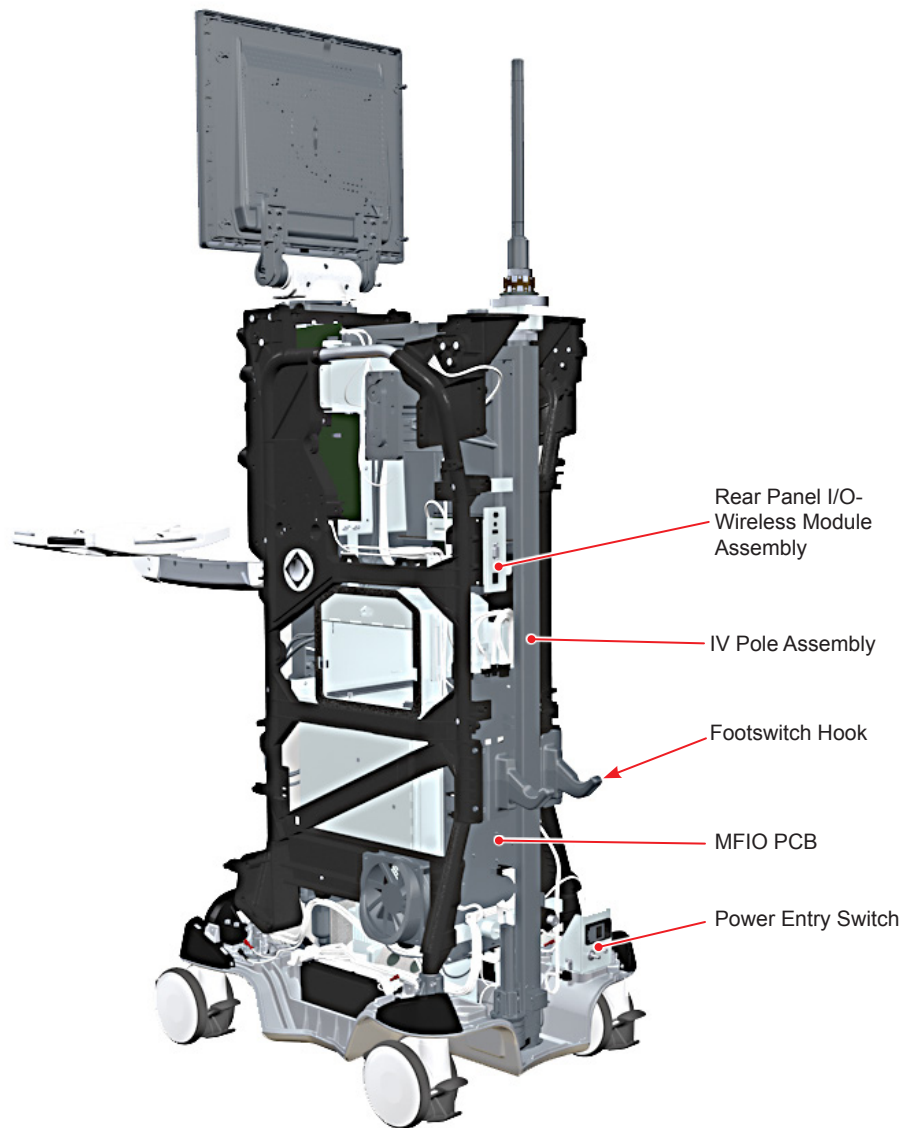


Figure 3-2 **Module Location Diagram (continued)**

Table 3-1 Disassembly Quick Reference Guide

STEP #	DESCRIPTION	PART #	SYSTEM+	ITEMS TO REMOVE FIRST	HARDWARE (see Table 3-2 for screw specifications)	NOTES
+ System Definitions: O = Original Centurion Vision System; Sil = Silver System; AS = Active Sentry System; All = common to all systems						
OUTER PANELS						
1	Upper Rear Panel	215-2598-50x	All	None	3 mm hex captive screw (4)	
2	Lower Rear Panel	215-2822-50x	O, AS	1	3 mm hex captive screw (2)	CAUTION: Cable connected to MFIO PCB.
		215-2822-502	Sil			No Charging PCB for Silver.
3	Front Vent Panel	215-3111-50x	All	None	3 mm hex captive screw (2)	
4	Upper Front Panel	215-2301-001	O	3	3 mm hex captive screw (2)	
		215-2301-004	AS			
		215-2301-006	Sil			
5	Lower Front Panel	215-2018-50x	All	3, 4	none	
6	Front Bumper	215-1278-00x	All	3, 4, 5	5 mm hex screw (807-047) and washer (4 ea.)	
7	Front Foot Handle Panel	215-2346-00x	All	3, 4, 5, 6	3 mm hex screw (807-015) (2)	
8	Work Surface	215-1833-50x	O, AS	None	5 mm hex screw (807-043) (4)	
9	Display Insert Assembly (Top Cover)	215-1837-50x	O, AS	8	3 mm hex captive screw (4)	No removal of work surface on Silver.
		215-3526-501	Sil		2.5 mm hex screw (807-184) (2)	
10	Upper Right Panel	215-1323-00x	O, AS	1, 9 (loosen screws only)	3 mm hex screw (807-015) (3)	
		215-1323-004	Sil			
11	Upper Left Panel	215-1322-00x	O, AS	1, 9 (loosen screws only)	3 mm hex screw (807-015) (3)	
		215-1322-004	Sil			
12	Lower Left Panel	215-1324-00x	All	1, 2, 11	3 mm hex screw (807-014) (6) and washer (3)	
13	Lower Right Panel	215-2339-50x	O, AS	1, 2, 10	3 mm hex screw (807-014) (6) and washer (3)	No latch mechanism on Silver
		215-3511-001	Sil			
14	Left Handle Cover	215-2715-50x	All	3, 4, 5, 11, 12	3 mm hex screw (807-013) (2)	
15	Right Handle Cover	215-2714-50x	All	3, 4, 5, 10, 13	3 mm hex screw (807-013) (2)	
16	Handle	215-3060-001	All	1, 2, 4, 5, 10, 12 - 15	4 mm hex screw (807-026) (8) 5 mm hex screw (807-044) (2) 6 mm hex screw (807-028) (6)	Washer (801-005) (8) Washer (801-006) (2)
17	Display Wrap Handle Display Bucket	215-1866-00x 215-2475-00x	All	None	4 mm hex screw (807-028) (4) 3 mm hex screw (807-014) (4)	

Table 3-1 Disassembly Quick Reference Guide

STEP #	DESCRIPTION	PART #	SYSTEM+	ITEMS TO REMOVE FIRST	HARDWARE (see Table 3-2 for screw specifications)	NOTES
+ System Definitions: O = Original Centurion Vision System; Sil = Silver System; AS = Active Sentry System; All = common to all systems						
CONSOLE COMPONENTS						
18	Fluidics Module and Fluidics Controller Assembly	215-1660-50x 215-1007-50x	All	3, 4, 5	3 mm hex captive screw (4) 3 mm hex captive screw (2)	
19	Ultrasonics (U/S) PCB Assembly	215-1009-501	O	3, 4	3 mm hex captive screw (2)	This assembly contains new US Controllers PCB P/N 215-3481-551 for Silver and AS systems only.
		215-1009-503	Sil			
		215-1009-504	Sil, AS			
20	Upper Backplane PCB	215-1277-552	All	3, 4, 18, 19	2.5 mm hex screw (807-005) (8)	
21	Active Irrigation (AI) Assembly	215-2736-50x	O, AS	8, 9	3 mm hex screw (807-017) (4) and washer (4)	
22	Tray Arm Assembly	215-1091-502	O, AS	3, 4, 5	5 mm hex screw (807-044) (4)	
		215-1091-503	Sil			
23	Tray Assembly	215-1834-502	O, AS	None	2 mm hex screw (809-001) (4)	
		215-1834-503	Sil			
24	Pneumatic Manifold	215-1010-50x	All	3, 4, 5	3 mm hex captive screw (2)	
25	Power Supply	215-2421-00x	All	3, 4, 5	2.5 mm hex captive screw (2)	
26	Host Module	215-1100-50x	All	3, 4, 5	2.5 mm hex captive screw (2)	
27	Host CPU Battery	--	All	3, 4, 5, 26	none	
28	Filter/Subwoofer Box	215-1796-50x	All	3, 4, 5	3 mm hex screw (807-014) (4) and washer (4)	
29	Rear Panel I/O-Wireless Module	215-2920-50x	All	1, 2	3 mm hex screw (807-017) (2)	
30	IV Pole Assembly	215-1787-50x	All	1, 2, 8, 9	5 mm hex screw (807-041) (4) -> 3 mm hex screw (807-015) (2) -> 10 mm nut and washer (2 ea) ->	- Work Surface Hub - Top of IV Pole - Bottom of IV Pole
	Footswitch Hook	215-1533-00x	All	1, 2	3 mm hex screw (807-014) (4)	
32	MFIO Modem	215-2438-55x	All	1, 2, 29	Standard head screw (2)	
33	MFIO Battery		All	1, 2, 29	none	
34	MFIO PCB	215-1353-55x	All	1, 2, 8, 9, 29, 29	3 mm hex screw (807-013) (7)	
35	Lower Fan Assembly	215-2857-00x	All	1, 2, 11, 12	3 mm hex screw (807-023) (4)	

Table 3-1 Disassembly Quick Reference Guide

STEP #	DESCRIPTION	PART #	SYSTEM*	ITEMS TO REMOVE FIRST	HARDWARE (see Table 3-2 for screw specifications)	NOTES
+ System Definitions: O = Original Centurion Vision System; Sil = Silver System; AS = Active Sentry System; All = common to all systems						
36	Footswitch Charger PCB	215-2008-55x	O, AS	1, 2	3 mm hex screw (807-014) (4) Retainers (4) 7 mm nut & star washer ->	- for cable clamp
37	Display Assembly	215-2815-00x	All	17	5 mm hex screw (807-043) (8)	
38	Batteries	190-020	All	1-5, 10-13	3 mm hex captive screw (2)	
39	Pneumatic Pump Assembly	215-1027-50x	All	1-7, 10-13	3 mm hex captive screw (4)	
40	Standby Switch	215-2286-50x	All	1	3 mm hex screw (807-013) (3)	
41	Rubber Bumpers	See procedure for Part Numbers	All	See procedure for additional information	None	
42	Casters	215-1792-00x	All	See procedure for additional information	24 mm nut and washer	
43	PEL Assemblies	Right: 215-1457-50x Left: 215-1458-50x	All	Right: 3, 4, 10 Left: 3, 4, 11	3 mm hex screw (807-018) (4)	
44	Side Speakers	215-1110-00x	All	Right: 1, 2, 10, 13 Left: 1, 2, 11, 12	2 mm hex screw (786-292) (4)	
45	Base	215-1219-001	All	1-7, 9-11	5 mm hex screws (807-043) 3 mm hex screws (807-012)	- secures frame to base - IV Pole Ground Strap
46	Drawer Slide Level Travel Assembly	215-1784-001	All	1-5, 11, 24, 26	7 mm nuts	
47-50	Footswitch Disassembly		O, AS, Sil ¹			¹ On Silver systems, the footswitch must be cabled to the system.
MODULE LEVEL DISASSEMBLY						
53	Fluidic Module Hub Roller Assembly	215-2387-501	All	18		
54	Fluidics Latch Springs	215-3408-001	All	18		
55	Fluidics Bezel	215-2973-501	All	18	2.5 mm hex screw (807-002) and washer	
56	Fluidics Front Clamping Bracket	215-3410-50x	All	18		

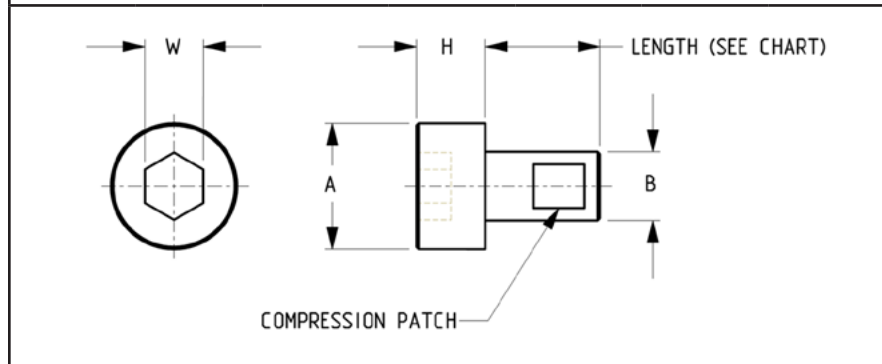
Table 3-1 Disassembly Quick Reference Guide

STEP #	DESCRIPTION	PART #	SYSTEM*	ITEMS TO REMOVE FIRST	HARDWARE (see Table 3-2 for screw specifications)	NOTES
+ System Definitions: O = Original Centurion® Vision System; Sil = Silver System; AS = Active Sentry System; All = common to all systems						
57	Active Irrigation (AI) Load Cable Assembly Removal	215-3344-001	O, AS	21	hex screw (786-507) (3) with loctite (892-042) 2.5 mm hex screw (807-003)	
58	Bag ID Reader PCB Assembly Removal	215-2931-501	O, AS	21	2.5 mm hex screw (807-002)	
59	Pneumatic Front Manifold	215-1366-501	All	18	3 mm hex screw (807-018) (3)	
60	Pneumatic Fitting Sleeve and Core Removal		All			
61	Coagulation Banana Jacks	063-047	All	18		
62	Infiniti® U/S Handpiece Cable Assembly	215-2957-501	All	19		
63	Centurion® U/S Handpiece Cable Assembly	215-2870-001	O	19		
		215-3473-001 215-3474-001	Sil, AS			
64	Task Light Assembly	215-3446-501	All	18	3 mm hex screw (807-014) (2)	
65	Console Footswitch Connectors	<u>W107</u> : 215-1107-001 <u>W108</u> : 215-1108-001	All	7		
66	USB Touchscreen Interface Cable Assembly (W126)	<u>W126-P1</u> : 215-2386-001	All	11, 17, 18	2.5 mm hex screw (807-003)	
67	Display Power Cable Assembly	<u>W103</u> : 215-1103-001	All	11, 17, 18	2.5 mm hex screw (807-003)	
68	Display Video Cable Assembly	<u>W104</u> : 215-1104-001	All	11, 17, 18, 65	2.5 mm hex screw (807-003)	
69	Display Arm Base Mount Assembly	215-1877-507	All	3-5, 8, 9, 18, 19, 37		
70	IV Pole Dual Sensor Bracket	215-2591-001	All	1, 2		

Table 3-2 Screw Reference Chart *

Part #	Size	Length	A (max)	B (max)	H (max)	W
807-002	M3 x 0.5	5.0	5.5	3.0	3.0	2.5
807-005	M3 x 0.5	12.0	5.5	3.0	3.0	2.5
807-013	M4 x 0.7	8.0	7.0	4.0	4.0	3.0
807-014	M4 x 0.7	10.0	7.0	4.0	4.0	3.0
807-015	M4 x 0.7	12.0	7.0	4.0	4.0	3.0
807-017	M4 x 0.7	20.0	7.0	4.0	4.0	3.0
807-018	M4 x 0.7	25.0	7.0	4.0	4.0	3.0
807-023	M4 x 0.7	50.0	7.0	4.0	4.0	3.0
807-026	M5 x 0.8	10.0	8.5	5.0	5.0	4.0
807-028	M5 x 0.8	16.0	8.5	5.0	5.0	4.0
807-041	M6 x 1.0	10.0	10.0	6.0	6.0	5.0
807-043	M6 x 1.0	16.0	10.0	6.0	6.0	5.0
807-044	M6 x 1.0	20.0	10.0	6.0	6.0	5.0
807-047	M6 x 1.0	35.0	10.0	6.0	6.0	5.0
807-184	M4 x 0.7	8.0	7.0	4.0	4.0	2.5

* All units in mm.



DISASSEMBLY INSTRUCTIONS

NOTES:

- Left and right orientation is referred to from the console perspective
- Replacement is performed in reverse order of disassembly unless noted otherwise.
- Refer to [Figure 3-1](#) and [Figure 3-2](#) for component location.

REMOVAL OF OUTER PANELS (see [Figure 3-1](#))

The outer panels are designed so that each upper panel extends over the panel below it, and the rear panel extends over the side panels. Therefore, when removing the outer panels, the general rule is that an upper panel must be removed in order to remove a lower panel. Additionally, the rear panel must be removed in order to remove a side panel. In some cases, panel access may be allowed by simply loosening the screws securing the panel above it. The following instructions will enable disassembly in a timely yet safe manner.

1. Upper Rear Panel (215-2598-50x)

- 1.1 Loosen four 3 mm captive screws securing Upper Rear Panel to chassis and remove panel from console.

2. Lower Rear Panel (215-2822-50x)

- 2.1 Remove Upper Rear Panel.
- 2.2 Unplug power cord from rear of console.
- 2.3 Loosen two 3 mm captive screws securing top of Lower Rear Panel to console.

CAUTION

The Footswitch Charging PCB is mounted the Lower Rear Panel and is connected to the console (MFIO PCB) by W147 (see [Figure 3-3](#)). After removal, panel can be laid flat on floor without disconnecting cable.

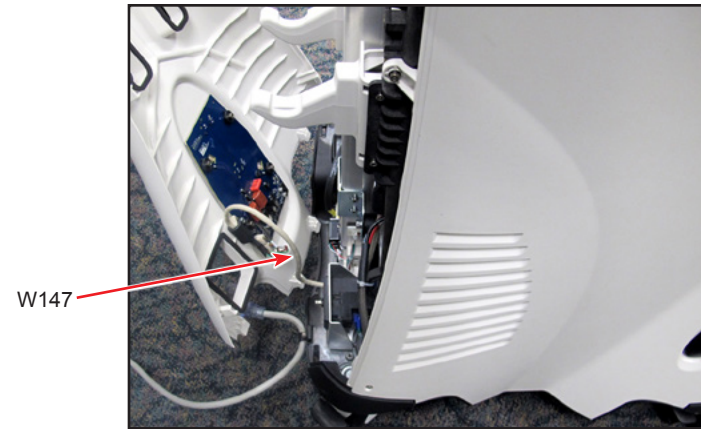


Figure 3-3 Cable W147 connecting Footswitch Charging PCB to MFIO PCB

- 2.4 Lift panel up to clear tabs securing bottom of panel, then remove from console. Lay panel on floor next to console.
- 2.5 *To completely remove panel from system:*
 - 2.5.1 Remove 40 A fuse on MFIO PCB (see [Figure 3-29](#)).
 - 2.5.2 Disconnect cable W147 from console connectors J25 and J39 of MFIO PCB.
- NOTE: Do not cut cable ties unless cable is being replaced.**
- 2.6 Remove Footswitch Charging PCB ([step 36](#)) from the Lower Rear Panel and install it on the new Lower Rear Panel.

3. Front Vent Panel (215-3111-50x)

- 3.1 Loosen two 3 mm captive screws securing Front Vent Panel to console.
- 3.2 Remove Vent Panel.

4. Upper Front Panel (215-2301-001)

- 4.1 Remove Front Vent Panel.
- 4.2 Turn Display as shown in [Figure 3-4](#), and loosen two 3 mm captive screws securing top of Upper Front Panel to Top Display Panel.



Figure 3-4 Captive Screws Securing Top of Upper Front Panel to Top Display Panel

- 4.3 Reposition Tray Arm as necessary to allow clearance for Upper Front Panel to be pulled straight out and away from system.
- 4.4 Remove Upper Front Panel.

5. Lower Front Panel (215-2018-50x)

- 5.1 Place the tray in the stored position.
- 5.2 Remove Front Vent Panel
- 5.3 Remove Upper Front Panel.
- 5.4 Lift panel up to clear tabs securing bottom of panel, then remove from console.

6. Front Bumper (215-1278-00x)

- 6.1 Remove Lower Front Panel
- 6.2 Loosen and remove four 5 mm hex screws and washers securing bumper to console.
- 6.3 Remove Front Bumper from console.

7. Front Foot Handle Panel (215-2346-00x)

- 7.1 Remove Front Bumper.
- 7.2 Remove two 3 mm hex screws securing panel to console. A ratcheting hex wrench is the preferred tool for this step.
- 7.3 Lift panel up to clear tabs securing bottom of panel, then remove from console.

8. Work Surface (215-1833-50x) - Not applicable to Silver Systems

- 8.1 Unscrew and remove Work Surface button (see [Figure 3-5](#)).

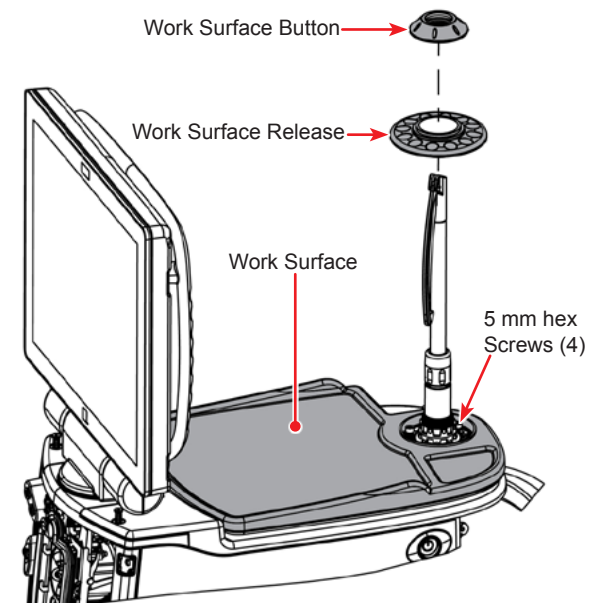


Figure 3-5 Removal of Work Surface Button and Release Button

- 8.2 Remove Work Surface Release button from IV Pole.
- 8.3 Loosen four 5 mm hex screws securing Work Surface to console.
- 8.4 Lift Work Surface up and remove from console.

9. Display Insert Assembly (Top Cover)

(215-1837-50x for original & AS systems; 215-3526-501 for Silver systems)

- 9.1 Remove Work Surface (this step not applicable to Silver systems).
- 9.2 Loosen four 3 mm captive hex screws securing Display Insert to console (see [Figure 3-6](#)). Reposition Display as necessary to access screws.
- 9.3 Loosen and remove two 2.5 mm hex screws securing Display Insert to console.
- 9.4 Grasp one side of the front part of the Display Insert (near display) and the back of the panel (near the IV Pole), then lift the panel up and back until both parts of the panel have cleared the “lip” of the chassis underneath the Display Insert Panel (see photo in [Figure 3-6](#)). Leave Display Insert in this position.
- 9.5 While maintaining the position of the Display Insert, lift the other side of the front part of the Display Insert and move backward until it clears the “lip” of the chassis.
- 9.6 Carefully lift and move Display Insert back taking care to reposition front captive screws and display as necessary to gain clearance. When clearance is achieved, remove Display Insert from console.

NOTE: There are concealed slots in the chassis that allow the captive screws to slide with panel as it is moved.

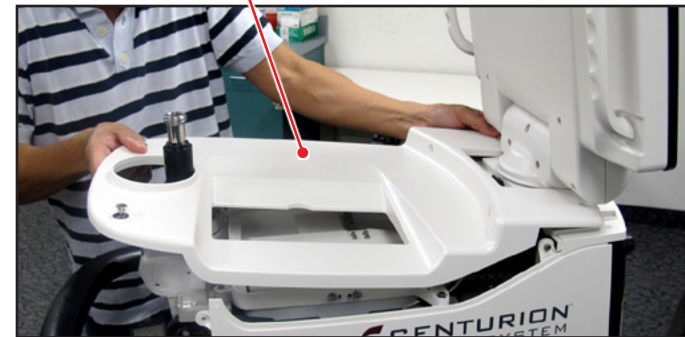
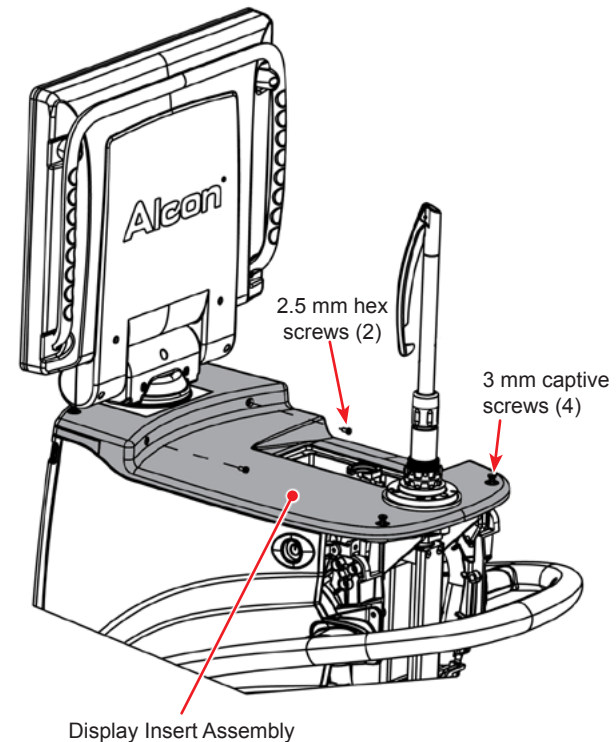


Figure 3-6 Removal of Display Insert Assembly (AS system shown)

10. Upper Right Panel (215-1323-00x)

- 10.1 Remove Upper Rear Panel.
- 10.2 Loosen four 3 mm captive screws and two 2.5 mm hex screws securing Display Insert Panel to chassis. On original and AS systems, move work surface and display as necessary to access screws.

Loosening these screws allows the Display Insert Panel to be lifted to access screws securing Upper Right Panel.

- 10.3 Remove three 3 mm hex screws securing top of Upper Right Panel to console.
- 10.4 Move Display Insert as necessary and lift Upper Right Panel to clear tabs securing bottom of panel. Remove panel from console.

REPLACEMENT: When positioning panel and aligning tabs, you may have to leave bottom front tab out of place temporarily. When all other tabs are in place, apply pressure where bottom front tab is located until it “pops” into place.

11. Upper Left Panel (215-1322-00x)

- 11.1 Remove Upper Rear Panel.
- 11.2 Loosen four 3 mm captive screws and two 2.5 mm hex screws securing Display Insert Panel to chassis. On original and AS systems, move work surface as necessary to access screws.
Loosening these screws allows the Display Insert Panel to be lifted so that screws securing Upper Left Panel can be accessed.
- 11.3 Disconnect Standby switch.
- 11.4 Remove three 3 mm hex screws securing top of Upper Left Panel to console.

- 11.5 Move Display Insert as necessary and lift Upper Right Panel up to clear tabs securing bottom of panel, then remove from console.

REPLACEMENT: When positioning panel and aligning tabs, you may have to leave bottom front tab out of place. When all other tabs are in place, apply pressure where bottom front tab is located until it “pops” into place. Ensure that panel is not "flexed or bowed" and there are no gaps between panel and PEL assembly.

12. Lower Left Panel (215-1324-00x)

- 12.1 Remove Upper and Lower Rear panels.
- 12.2 Remove Upper Left panel.
- 12.3 Remove drawer by pulling it out as far as possible then pressing two the release tabs on each slide (on underside of drawer).
- 12.4 Remove six 3 mm hex screws and washers securing Lower Left Panel to console.
- 12.5 At drawer opening, release two tabs securing panel to drawer opening then pull panel out and away from console.

13. Lower Right Panel

(215-2339-50x for original & AS systems; 215-3511-001 for Silver systems)

- 13.1 Remove Upper and Lower Rear panels.
- 13.2 Remove Upper Right panel.
- 13.3 Remove six 3 mm hex screws and washers securing Lower Left Panel to console.
- 13.4 For original and AS systems: The panel is now held in place by a latch mechanism located just below the AI Chute in the console. The latch release is accessed from the rear through a hole in the sheet metal bracket that the MFIO PCB is mounted on (see [Figure 3-7](#)).

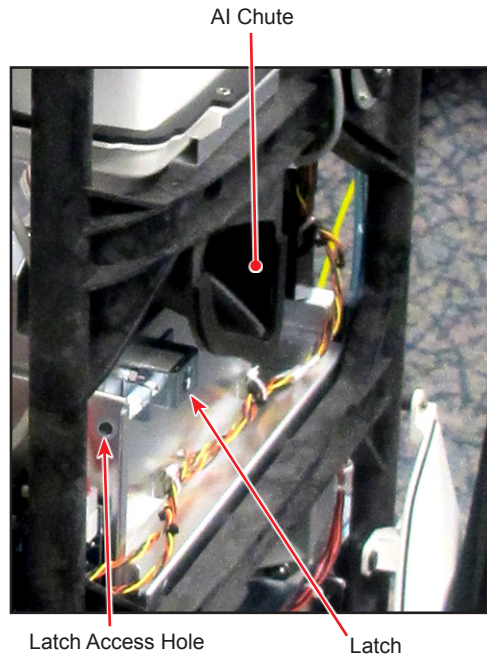


Figure 3-7 Lower Right Panel Latch Release (shown with panel removed)

- 13.5 Insert a 4 mm hex wrench through the hole and into the white latch release button, then turn the button either clockwise or counter-clockwise to release the panel. Remove panel from console.

REPLACEMENT: Ensure panel is properly seated into latch.

14. Left Handle Cover (215-2715-50x)

- 14.1 Remove Front Vent, Upper and Lower Front Panels.
- 14.2 Remove Upper and Lower Left Panels.
- 14.3 Remove two 3 mm screws securing Left Handle Cover to console.
- 14.4 Position Left Handle Cover as necessary so that it slides off tabs.
- 14.5 Remove Left Handle Cover from console.

15. Right Handle Cover (215-2714-50x)

- 15.1 Remove Front Vent, Upper and Lower Front Panels.
- 15.2 Remove Upper and Lower Right Panels.
- 15.3 Remove two 3 mm screws securing Right Handle Cover to console.
- 15.4 Position Right Handle Cover as necessary so that it slides off tabs.
- 15.5 Remove Right Handle Cover from console.

16. Handle (215-3060-001)

- 16.1 Remove Upper and Lower Front Panels.
- 16.2 Remove Upper and Lower Rear Panels.
- 16.3 Remove Upper and Lower Right Panels.
- 16.4 Remove Upper and Lower Left Panels.
- 16.5 Remove Right and Left Handle Covers.
- 16.6 Remove eight 4 mm hex screws and washers securing upper rear Handle mounts (left and right sides - see [Figure 3-8](#)).
- 16.7 Remove two 5 mm hex screws and washers securing Handle to lower front Handle mounts (left and right sides).

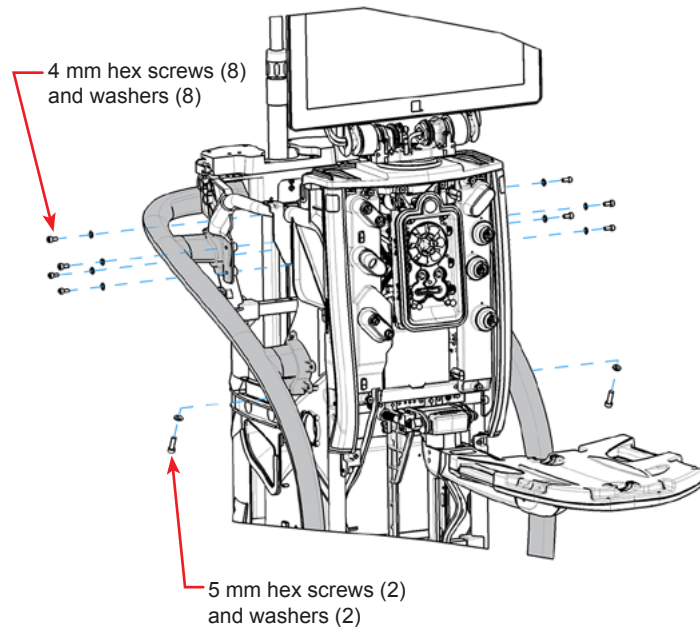


Figure 3-8 Handle Removal - Upper Screws

- 16.8 Remove six 6 mm hex screws securing Handle to the console (left and right sides - see [Figure 3-9](#)).

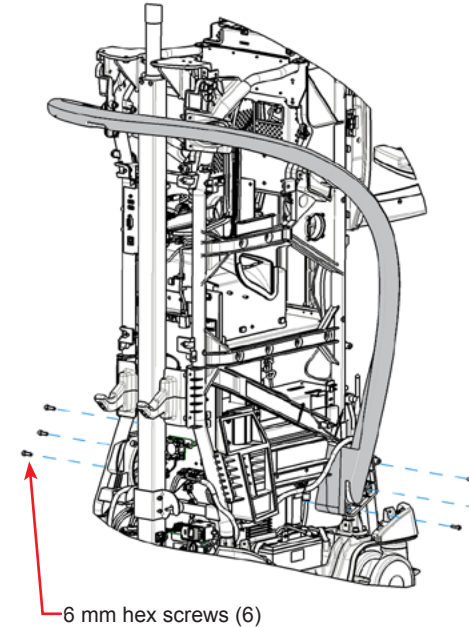


Figure 3-9 Handle Removal - Lower Screws

- 16.9 Remove the Handle from the lower front Handle mounts (left and right), and then remove the Handle.

17. Display Wrap Handle (215-1866-00x) and Display Bucket (215-2475-00x)

- 17.1 Remove four 4 mm screws securing Display Wrap Handle to display assembly. Remove Display Wrap Handle from system (see [Figure 3-10](#)).

CAUTION

REPLACEMENT: Be sure to install the Display Wrap Handle in the proper orientation. Installing handle upside down may result in a cracked display.

- 17.2 Remove four 3 mm hex screws securing Display Bucket to display assembly. Remove Display Bucket from system.

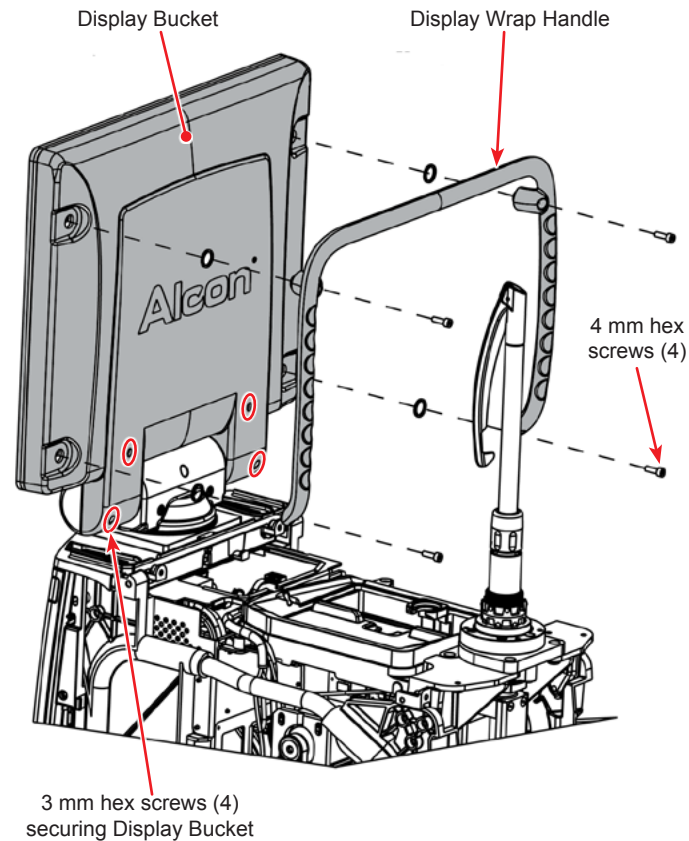


Figure 3-10 Display Wrap Handle and Display Bucket Removal

REMOVAL OF CONSOLE COMPONENTS

18. Fluidics Module (215-1660-50x) and Fluidics Controller Assembly (215-1007-50x)

- 18.1 Remove Front Vent Panel, Upper Front Panel, and Lower Front Panel.
- 18.2 Remove black Fluidics Bezel by pulling it straight out from Fluidics Module. Bezel is attached to module by cable – allow bezel to hang freely in front of Fluidics Module during remainder of procedure (see [Figure 3-11](#)).

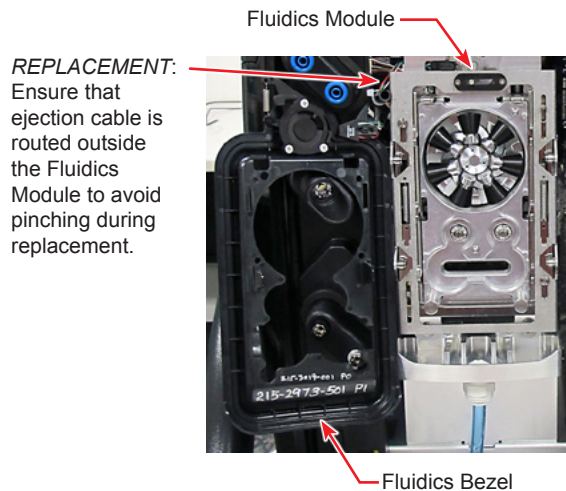


Figure 3-11 Fluidics Module with Bezel Removed

- 18.3 Loosen four 3 mm captive hex screws securing top and bottom of Fluidics Module to chassis (see [Figure 3-12](#)).
- 18.4 Loosen two 3 mm captive hex screws securing Fluidics Controller Assembly to chassis.
- 18.5 Disconnect yellow and blue pneumatic tubing from Pneumatic manifold (see [Figure 3-21](#)).

REPLACEMENT: Make note of tubing routing for replacement.

- 18.6 Carefully pull both assemblies out from console and set on a working surface.

CAUTION

- Use care to avoid damaging the cables between the module and PCB.
- Make certain to unlock the cable connectors from the PCB.

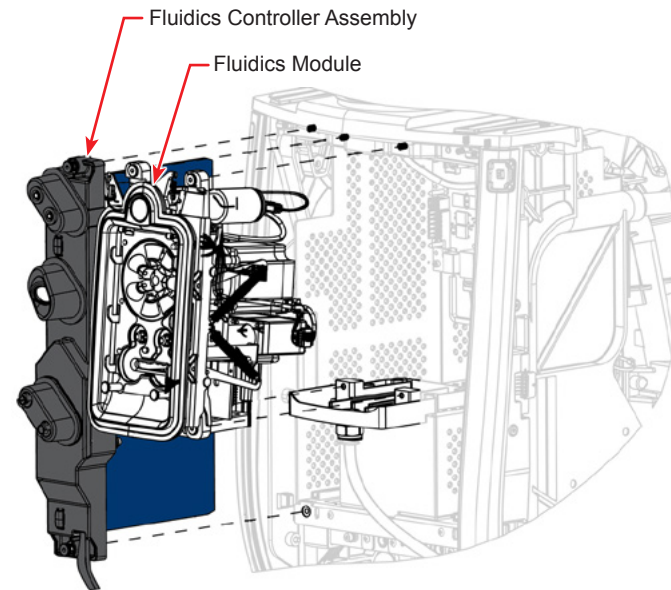


Figure 3-12 Fluidics Module and Fluidics PCB Assembly Removal

- 18.7 Disconnect J4, J5, J7, and J9 from Fluidics PCB. The two assemblies can now be separated.

REPLACEMENT:

- After reconnecting J4, J5, J7, and J9, carefully slide both assemblies into console making slight adjustments as necessary to ensure PCB seats properly into Upper Backplane.
- When securing assemblies to console, alternately tighten screws to ensure proper seating of PCB.

- Ensure that ejection cable is not pinched between Fluidics Module and console frame (see [Figure 3-11](#)).
- If Fluidics Controller Assembly (215-1007-50x) is replaced, perform the AI Travel Calibration located in Section Four of this document. If only the Fluidics PCB (215-1159-55x) is replaced, perform both the AI Travel Calibration and the Pneumatic Calibration procedures.

19. Ultrasonics (U/S) PCB Assembly (215-1009-50x)

- 19.1 Remove Front Vent and Upper Front Panels.
- 19.2 Loosen two 3 mm captive hex screws securing top and bottom of U/S PCB Assembly to chassis.
- 19.3 Pull U/S PCB Assembly straight out from console and remove ([Figure 3-13](#)).

REPLACEMENT:

- Carefully slide assembly into place making slight adjustments as necessary to ensure PCB seats properly into upper backplane. Handpiece connector cables may need to be repositioned while assembly is sliding into place.
- When securing assembly to console, alternately tighten screws to ensure proper seating of PCB.
- HP Connector removal uses same tool as *Infiniti** Vision System.

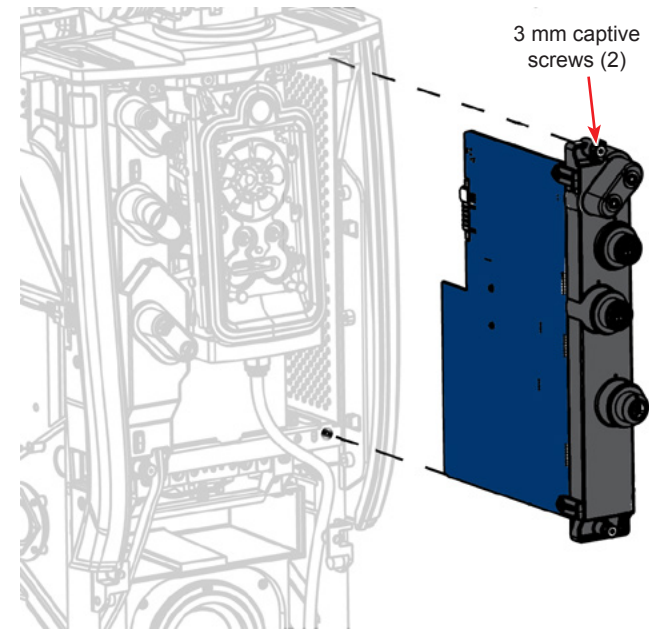


Figure 3-13 U/S PCB Assembly Removal

20. Upper Backplane PCB (215-1277-55x)

NOTE: 215-1277-552 was cut into production in April 2016 (cut in S/N 1601808201X) in preparation for future release of the Active Sentry system. 215-1277-552 is downward compatible with non-Active Sentry system.

- 20.1 Remove Front Vent and Upper Front Panels.
- 20.2 Remove Fluidics Mechanism, Fluidics PCB, and U/S PCB Assemblies.
- 20.3 Disconnect J12, J16, J10 (may require screwdriver), J11, J4, J3, and J9 from Upper Backplane PCB.
- 20.4 Remove eight 2.5 mm hex screws securing Upper Backplane PCB to console.
- 20.5 Carefully pull Upper Backplane PCB off guide posts, rotate to clear display cables, and remove from system ([Figure 3-14](#)).

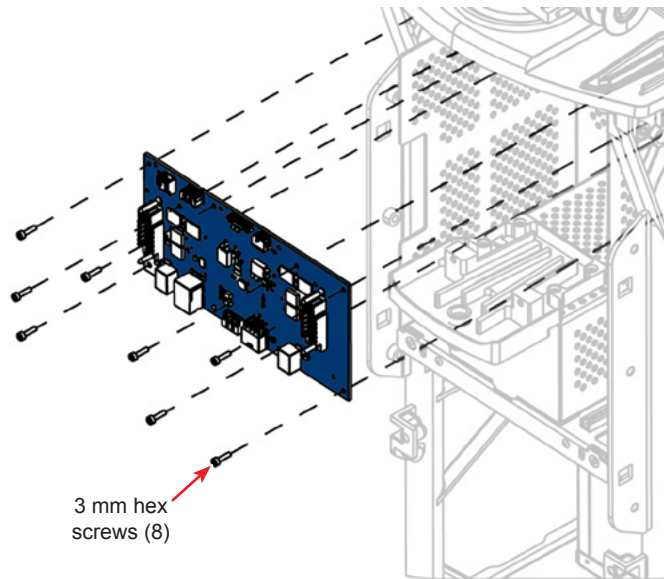


Figure 3-14 Upper Backplane PCB Removal

21. Active Irrigation (AI) Assembly (215-2736-50x) (This step not applicable to Silver Systems)

- 21.1 Remove Display Insert Panel.
- 21.2 Disconnect J10, J11, J12, and J16 from Upper Backplane PCB.
- 21.3 Remove four 3 mm hex screws and washers securing AI Assembly to console.
- 21.4 Pull AI Assembly up and out of chassis moving the assembly as necessary to gain clearance for removal (see [Figure 3-15](#)).

REPLACEMENT: When lowering AI Assembly into console, ensure clearance of all cables. Assembly should not rest on or "pinch" any cables.

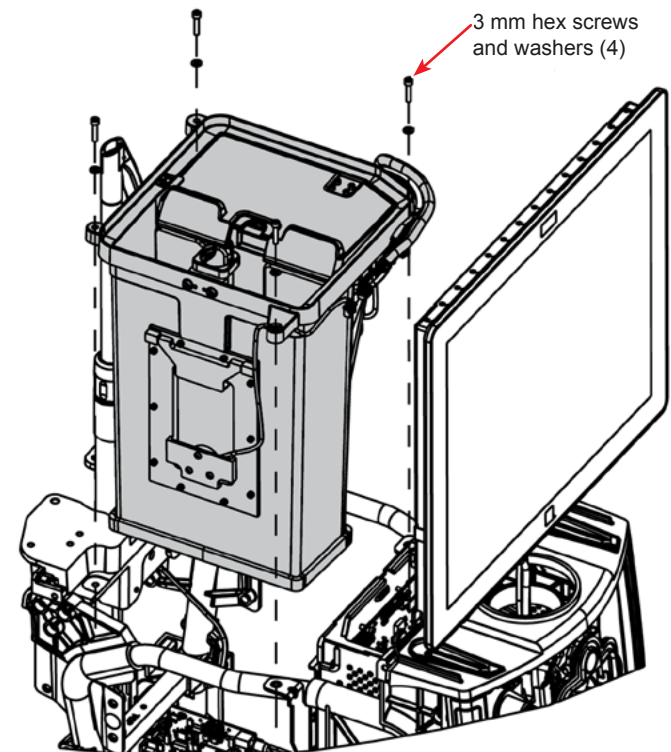


Figure 3-15 Active Irrigation Assembly Removal

22. Tray Arm Assembly (215-1091-50x)

- 22.1 Remove Front Vent, Upper and Lower Front Panels.
- 22.2 Remove four 5 mm hex screws (bottom screws first) securing Tray Arm Assembly to chassis and remove from console (see [Figure 3-16](#)).

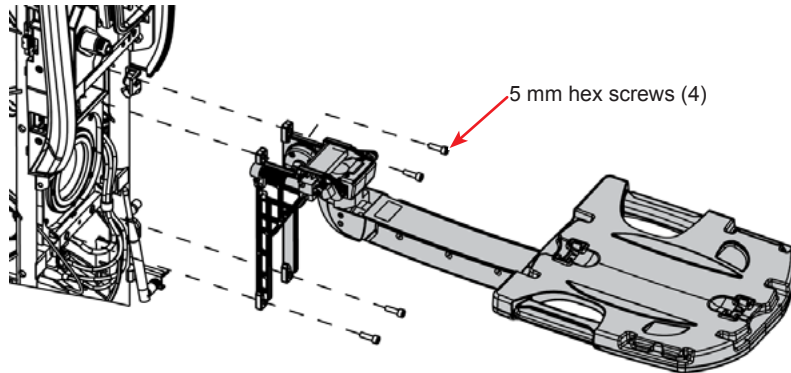


Figure 3-16 Tray Arm Assembly Removal

23. Tray Assembly

- 23.1 Raise the Tray Assembly to the highest position as shown in [Figure 3-17](#).

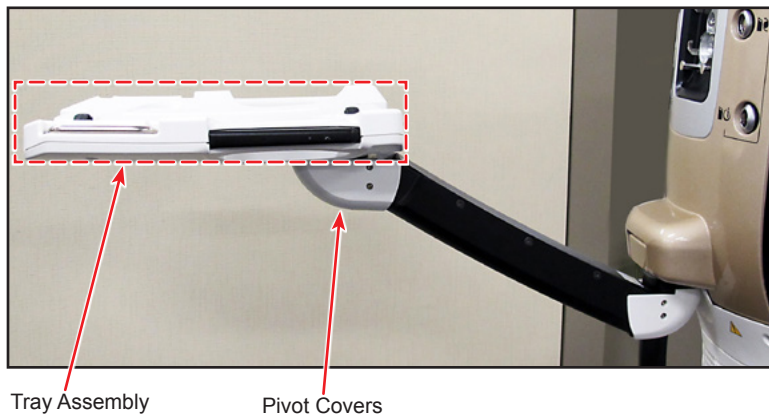


Figure 3-17 Tray Assembly at Highest Position

- 23.2 Remove four 2 mm hex screws securing left and right Pivot Covers. Remove covers from tray arm assembly.
- 23.3 Remove 1 inch nut securing Tray Assembly to Arm (see [Figure 3-18](#)). Be aware that there are washers and bearings behind the nut that may drop as the nut is removed (see [Figure 3-19](#)).

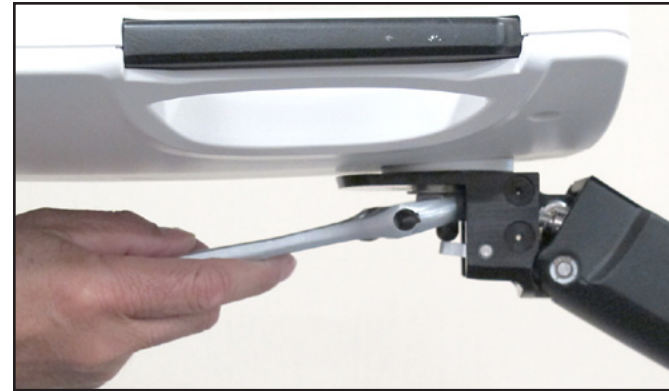


Figure 3-18 Tray Assembly Nut Removal

- 23.4 Remove Tray Assembly.
- 23.5 Install replacement Tray Assembly with proper washers positions.

CAUTION

There are five washers and two bearings used to attach the tray assembly to the arm (see [Figure 3-19](#)). Ensure these washers and bearings are installed in the proper orientation otherwise the Tray Arm Assembly may not function properly.

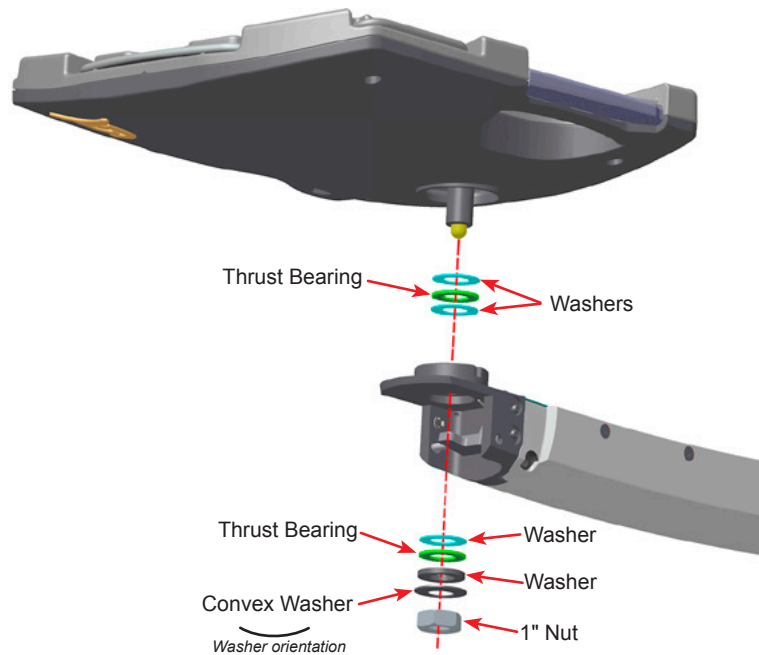


Figure 3-19 Washers and Bearings used to attach Tray Assembly to the Tray Arm

- 23.6 Fully tighten 1 inch nut then loosen ½ turn.
- 23.7 Test Tray Arm movement to ensure it is working properly.
- 23.7.1 If Tray Arm is not moving properly when handles are pressed (unlocked), turn the adjustment nut backwards or forwards until it does move properly (see [Figure 3-20](#)). Ensure Tray Arm locks in position when handles are released and unlocks when handles are pressed.

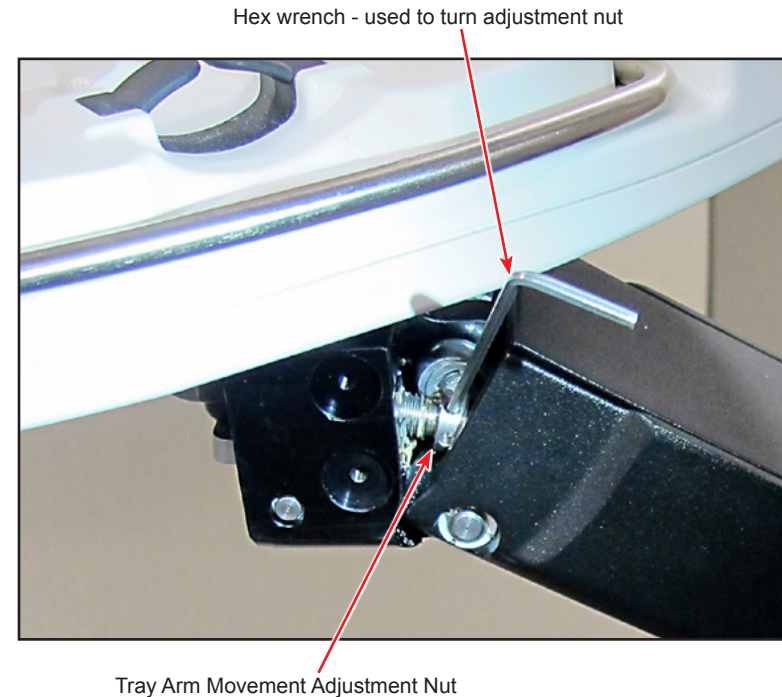


Figure 3-20 Adjusting Tray Arm Movement

- 23.8 Replace the Pivot Covers.

24. PNEUMATIC MAIN MANIFOLD (215-1010-501 or 215-3337-501)

NOTE: PN 215-3337-501 is the new Pneumatics Main Manifold that can only be used with systems containing the new Pneumatics Air Source (pump) PN 215-3242-501 and 28" Yellow Tubing PN 215-3477-002.

- 24.1 Remove Front Vent, Upper and Lower Front Panels.
- 24.2 Disconnect blue tubing between Pneumatic Manifold and Vit Pump (see [Figure 3-21](#)).
- 24.3 Disconnect yellow and blue tubing between Pneumatic Manifold and Fluidics PCB Assembly (see [Figure 3-22](#)).
- 24.4 Disconnect four electrical connectors (includes A28SENS1) from Pneumatic Manifold. Connectors are part of cable W133 which connects to the MFIO PCB at J8.
- 24.5 Loosen two 3 mm captive hex screws securing Pneumatic Manifold to chassis (see [Figure 3-23](#)).
- 24.6 Slide Pneumatic Manifold forward and remove from console.

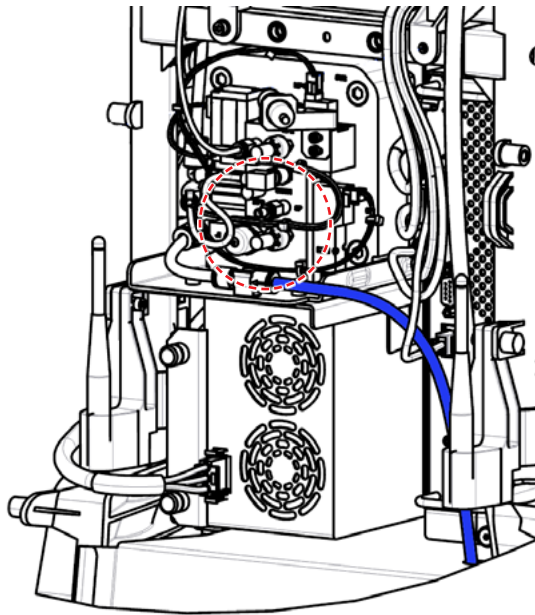


Figure 3-21 Pneumatic Tubing Connecting Pneumatic Manifold and Vit Pump

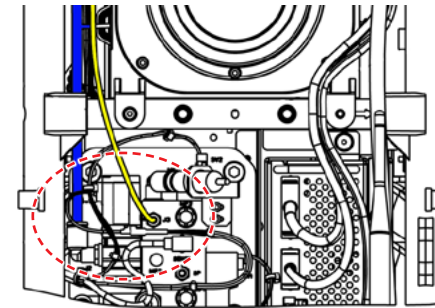


Figure 3-22 Pneumatic Tubing Connecting Pneumatic Manifold and Fluidics PCB Assembly

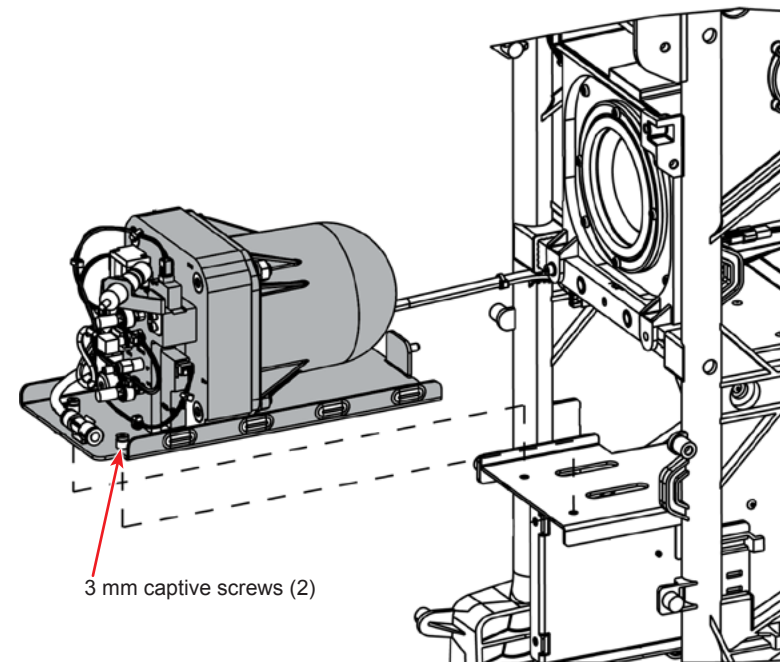
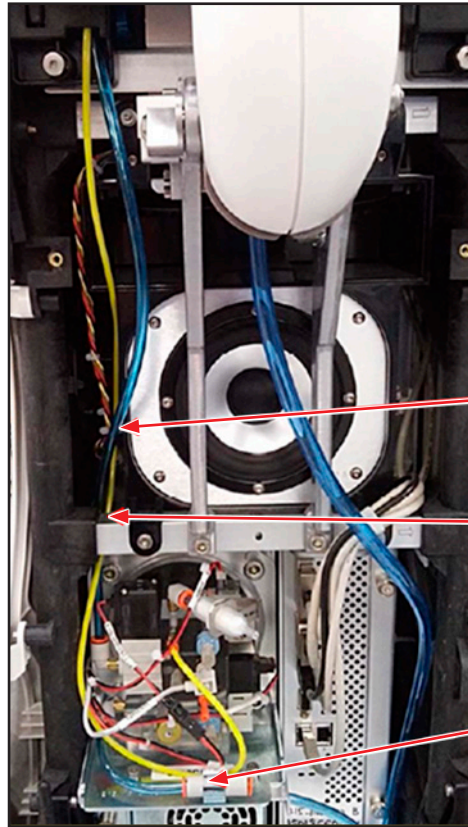


Figure 3-23 Pneumatic Manifold Removal

NOTE: For systems with new Pneumatics Main Manifold PN 215-3337-501, route the 28" yellow tubing as shown in [Figure 3-24](#) to prevent the tubing from getting pinched by the Front Panel.



Yellow tubing routing goes behind cable tie mount on filter box (215-1796-501). Blue tubing routing goes in front of cable tie mount.

Yellow tubing routing goes behind cross member on frame (215-1004-003). This is the same routing as for the blue tubing.

Bottom of Yellow tubing loop is routed behind check valve on the main manifold (215-3337-501).

Figure 3-24 Pneumatic Tubing Routing

25. POWER SUPPLY (215-2421-00x)

- 25.1 Remove Front Vent, Upper and Lower Front Panels.
- 25.2 Disconnect W111 P1 from Power Supply.
REPLACEMENT: Antenna should be pointing up with Power Supply cable routed around it.
- 25.3 Loosen two 2.5 mm captive hex screws securing Power Supply to chassis (see [Figure 3-25](#)).
- 25.4 Slide Power Supply forward, adjusting position as necessary to clear antenna, and remove from console.

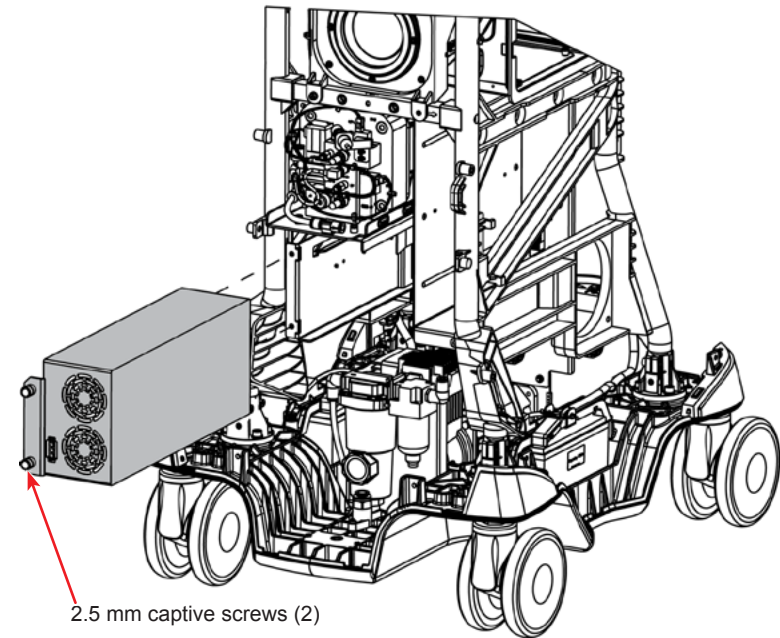


Figure 3-25 Power Supply Removal

26. HOST MODULE (215-1100-50x)

- 26.1 To backup the current system data, perform the "[BACKUP AND RESTORE SYSTEM SETTINGS AND DOCTOR MEMORIES THROUGH THE CONFIGURATION INSTALLER](#)" procedure in Section 4.
- 26.2 Remove Front Vent, Upper and Lower Front Panels.
- 26.3 Disconnect J10B (W164), J1A (W112), J1B (W126), J2 (W104), and J3 (W103) from Host Module.
- 26.4 Disconnect blue tubing from Pneumatic Manifold (provides clearance to remove Host module - see [Figure 3-21](#)).
- 26.5 Loosen two 2.5 mm captive screws securing Host Module to chassis (see [Figure 3-26](#)).
- 26.6 Pull Host Module forward while repositioning pneumatic tubing and cables to provide clearance for module removal. Remove Host Module from console.
REPLACEMENT: Carefully slide Host Module into console until it engages connector and is properly seated in place.
- 26.7 Install the Host software by performing step [2.1](#) of the [SOFTWARE INSTALLATION](#) procedure in Section 4.
- 26.8 To restore the system data, perform the "[BACKUP AND RESTORE SYSTEM SETTINGS AND DOCTOR MEMORIES THROUGH THE CONFIGURATION INSTALLER](#)" procedure in Section 4.

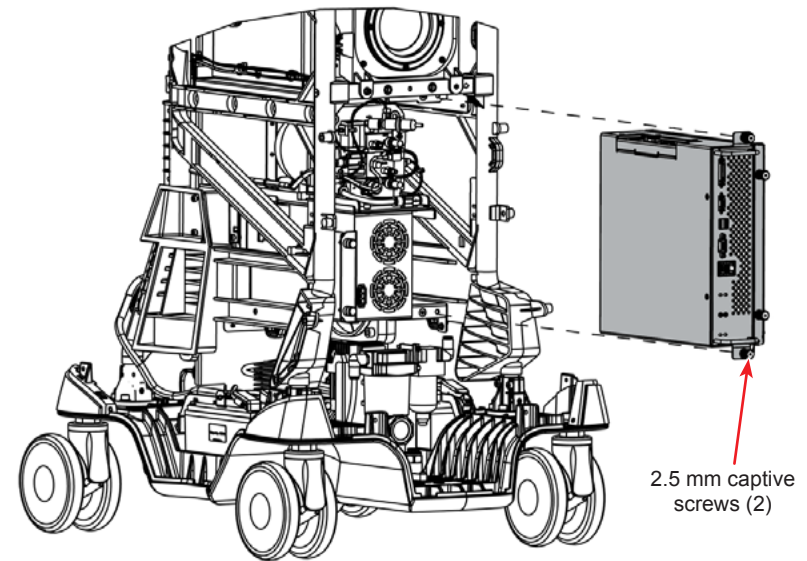


Figure 3-26 Host Module Removal

27. HOST CPU BATTERY

- 27.1 Remove Host Module.
- 27.2 Loosen two 2.5 mm hex captive screws securing the Host cover (see [Figure 3-27](#)), and then open the Host cover.

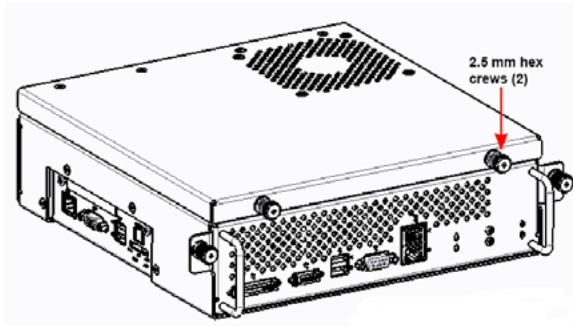


Figure 3-27 Screws Securing Host Module Cover

- 27.3 Remove battery BT1 (CR2032) from Host PCB by lifting one side of the coin battery and then pulling it out (see [Figure 3-28](#)).

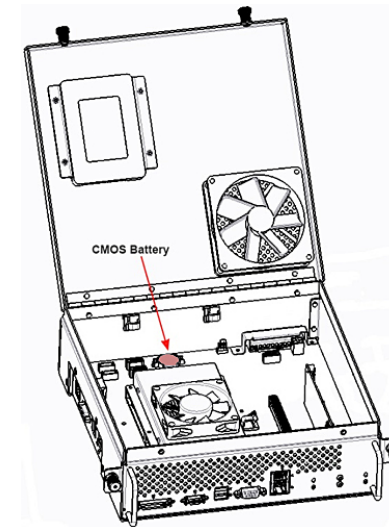


Figure 3-28 Host Module Battery Location

28. FILTER/SUBWOOFER BOX (215-1796-50x)

- 28.1 Remove Front Vent, Upper and Lower Front Panels.
- 28.2 Disconnect J1 from Sub-woofer.
- 28.3 Disconnect J18 and J35 from MFIO PCB.
- 28.4 Cut tie wraps securing W129-1 and W129-2 to chassis.
- 28.5 Remove four 3 mm hex screws and washer securing Sub-woofer/fan assembly to chassis (see [Figure 3-29](#)).
- 28.6 Carefully pull Filter/Subwoofer Box forward to remove from system.
- 28.7 FAN REMOVAL
 - 28.7.1 To remove fans from assembly, remove four 3 mm hex screws securing bracket to assembly.
 - 28.7.2 Remove two 3 mm hex screws securing front of fans to assembly. Cut tie wraps as necessary and remove fan(s).

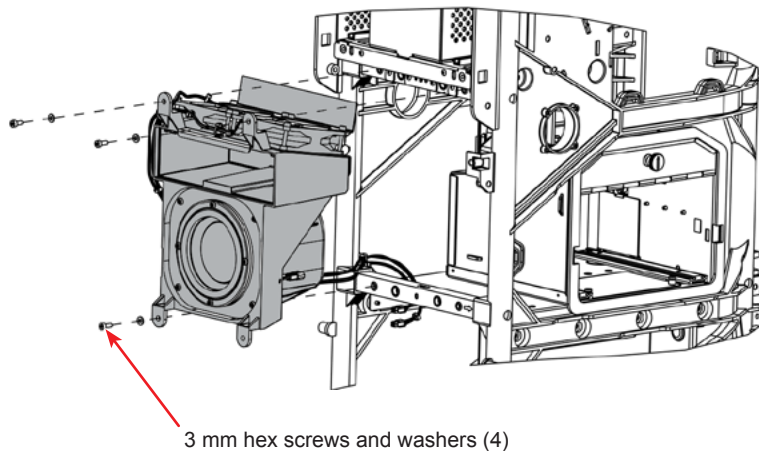


Figure 3-29 Filter/Subwoofer Box Removal

29. REAR PANEL I/O-WIRELESS MODULE ASSEMBLY (215-2920-50x)

- 29.1 Remove Upper Rear, Lower Rear, and Upper Left Panels.
- 29.2 Remove 40 A fuse from MFIO PCB (in case hardware is dropped).
- 29.3 Disconnect J4, J5, J7, and J10 from Wireless PCB.
- 29.4 Remove 2.5 mm hex screw and star washer securing ground terminal lug to Wireless PCB.
REPLACEMENT ORDER: From PCB – star washer/terminal lug/hex screw
- 29.5 Remove two 3 mm hex screws securing Rear Panel I/O-Wireless Module Assembly to chassis (see [Figure 3-30](#)). Screws are accessed from inside chassis; removal of lower right panel may be necessary.
- 29.6 Slide Rear Panel I/O-Wireless Module Assembly straight back and out of console.

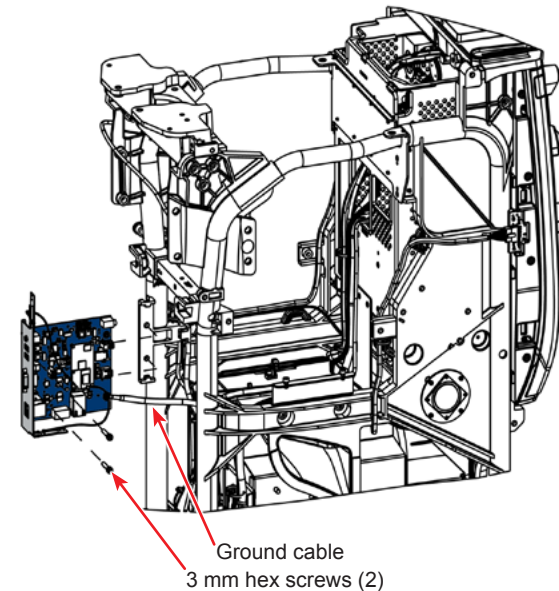


Figure 3-30 Rear Panel I/O-Wireless Module Assembly Removal

30. IV POLE ASSEMBLY (215-1787-50x)

- 30.1 Remove Work Surface (not applicable to Silver systems).
- 30.2 Remove Display Insert Assembly.
- 30.3 Remove Upper and Lower Rear Panels.
- 30.4 **For Original and AS systems:** Remove four 5 mm hex screws securing work surface hub at top of IV Pole Assembly to chassis. Slide hub up and remove from IV Pole Assembly (see [Figure 3-31](#)).

For Silver systems: Remove two 5 mm hex screws securing threaded sleeve mount at top of IV Pole Assembly to chassis. Slide mount up and remove from IV Pole Assembly (see [Figure 3-31](#)).

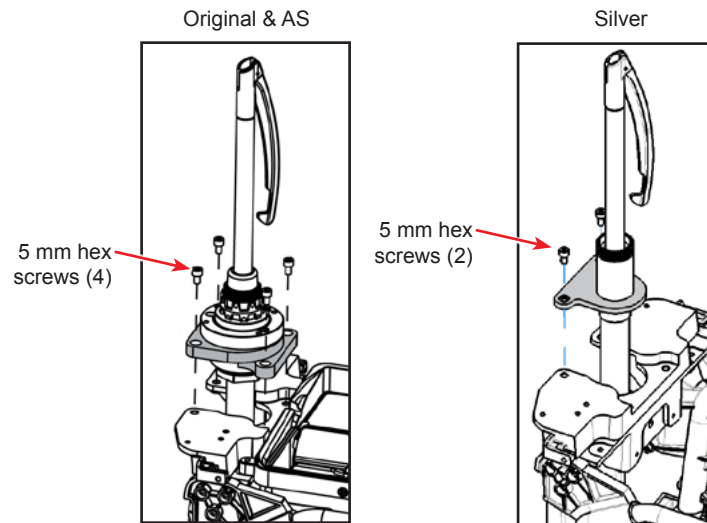


Figure 3-31 Work Surface Hub Removal

- 30.5 Remove two 3 mm hex screws securing inside top of IV Pole Assembly to chassis (see [Figure 3-32](#)).

- 30.6 Loosen two 10 mm nuts and washers securing bottom of IV Pole Assembly to standoffs on chassis. Nut do not need to be completely removed (see [Figure 3-32](#)).
- REPLACEMENT:** Do not tighten nuts until two 3 mm hex screws at inside top of assembly are in place.
- 30.7 Disconnect J5 and J23 from bottom of MFIO PCB.
 - 30.8 Remove 3 mm hex screw securing ground terminal lug to IV Pole Assembly.
 - 30.9 Lift IV Pole Assembly upward until there is enough clearance to remove assembly from console.

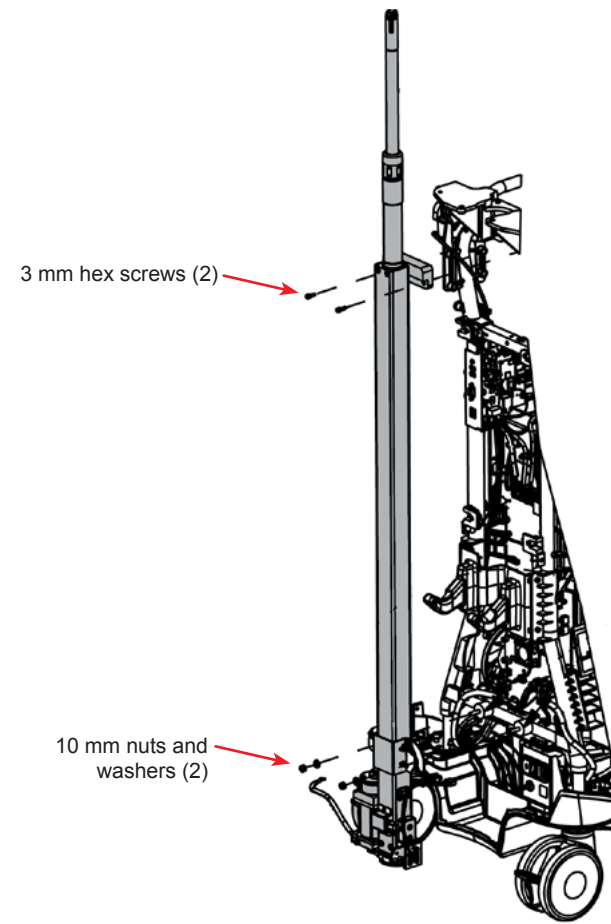


Figure 3-32 IV Pole Assembly Removal

IV POLE REPLACEMENT NOTES:

- Before installing the IV Pole, loosen the two 3 mm hex screws identified in [Figure 3-33](#).
- After the IV Pole is replaced, fully tighten the two 3 mm hex screws identified in [Figure 3-33](#).

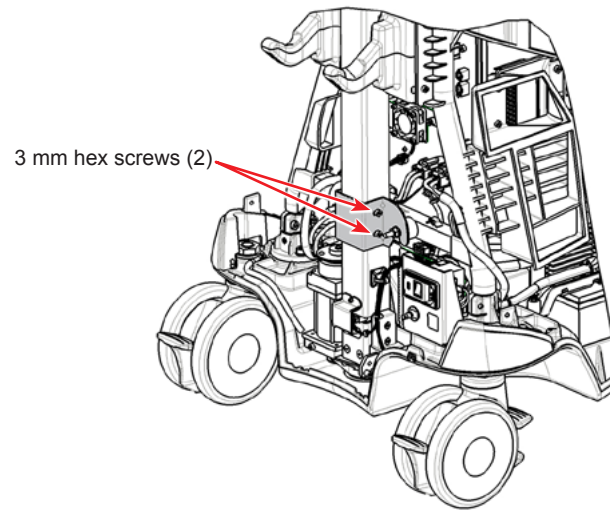


Figure 3-33 IV Pole Assembly Replacement

31. FOOTSWITCH HOOK (215-1533-00x)

- 31.1 Remove Upper and Lower Rear Panels.
- 31.2 Remove four 3 mm hex screws securing footswitch hanger to chassis (see [Figure 3-34](#)).
- 31.3 Slide Footswitch Hook up to provide clearance then rotate around IV Pole and remove from console.

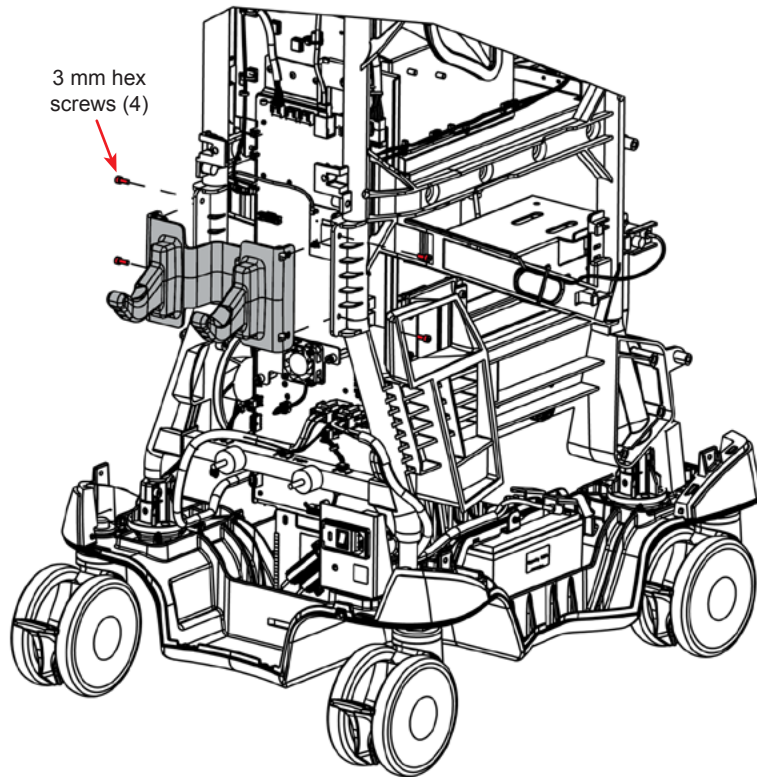


Figure 3-34 Footswitch Hook Removal (shown with IV Pole removed)

32. MFIO MODEM (215-2438-55x)

- 32.1 Remove Upper and Lower Rear Panels.
- 32.2 Remove Footswitch Hook.
- 32.3 Remove 40 A fuse from MFIO PCB (see [Figure 3-35](#)).

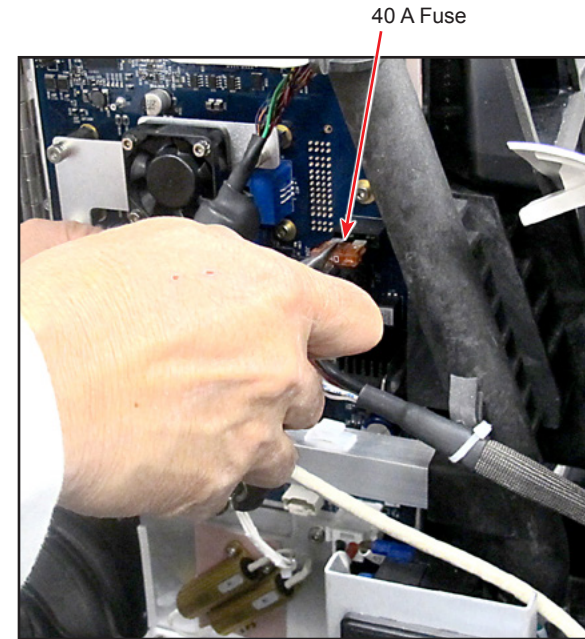


Figure 3-35 40 A fuse on MFIO PCB

- 32.4 Disconnect modem connectors J1 and J4.
- 32.5 Carefully remove two standard screws securing Modem PCB to MFIO PCB (see [Figure 3-36](#)).
- 32.6 Pull Modem PCB off two connectors on MFIO PCB and remove from console.

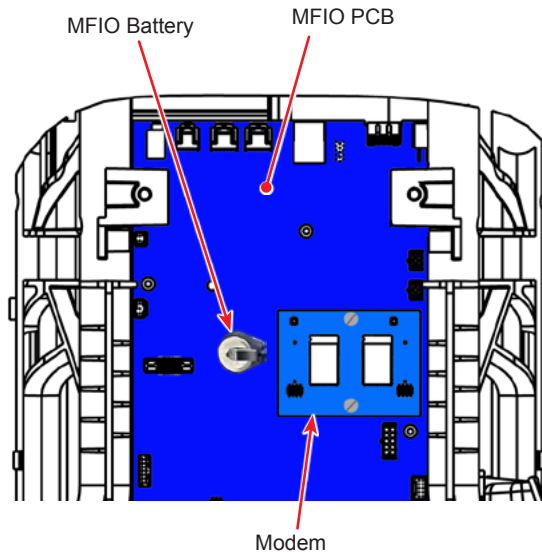


Figure 3-36 MFIO Modem Removal

33. MFIO PCB BATTERY

- 33.1 Remove Upper and Lower Rear Panels.
- 33.2 Remove Footswitch Hook.
- 33.3 Remove 40 A fuse from MFIO PCB (see [Figure 3-35](#)).
- 33.4 Remove battery BT1 (CR 2032) from MFIO PCB by pulling clip away from battery, then sliding the battery forward. See [Figure 3-36](#) for battery location.

34. MFIO PCB (215-1353-55x)

- 34.1 Remove Work Surface and Display Insert Assembly.
- 34.2 Remove Upper and Lower Rear Panels.
- 34.3 Remove IV Pole Assembly.
- 34.4 Remove Footswitch Hook.
- 34.5 Remove 40 A fuse from MFIO PCB.
- 34.6 Disconnect the connectors shown in yellow in [Figure 3-37](#).
- 34.7 Disconnect antenna cables at J1 and J4 from MFIO Modem PCB.
- 34.8 Disconnect Fan connector J38 from MFIO PCB.
- 34.9 Loosen three 3 mm captive hex screws securing Fan assembly to MFIO PCB. Remove fan assembly.
- 34.10 Remove three Fan assembly standoffs from MFIO PCB.
- 34.11 Remove seven 3 mm hex screws securing MFIO PCB to chassis.
- 34.12 Reposition MFIO PCB as necessary to remove from system.

REPLACEMENT: Ensure that PCB is properly seated on all guide pins and all screw holes are aligned before securing with screws.

CAUTION

When a new MFIO PCB is installed, ensure that the 40 A fuse is removed prior to installation.

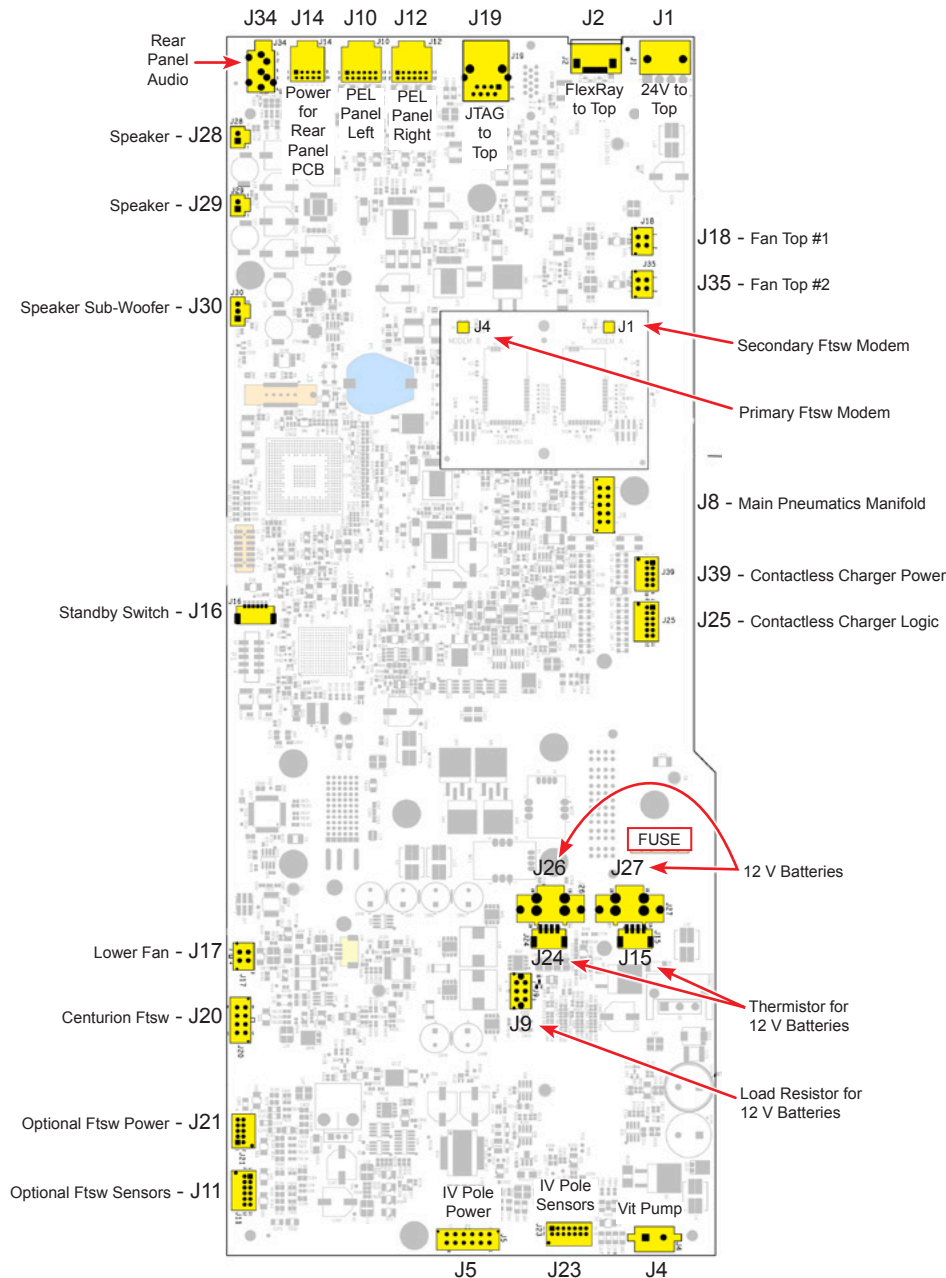


Figure 3-37 MFIO PCB Connector Diagram

35. LOWER FAN ASSEMBLY (215-2857-00x)

- 35.1 Remove Upper and Lower Rear Panels.
- 35.2 Remove Upper and Lower Left Panels.
- 35.3 Remove four 3 mm hex screws securing fan and duct to chassis (see [Figure 3-38](#)). **NOTE: Fan is still connected to MFIO PCB by cable.**
- 35.4 Pull fan from console and disconnect from J17 on MFIO PCB.

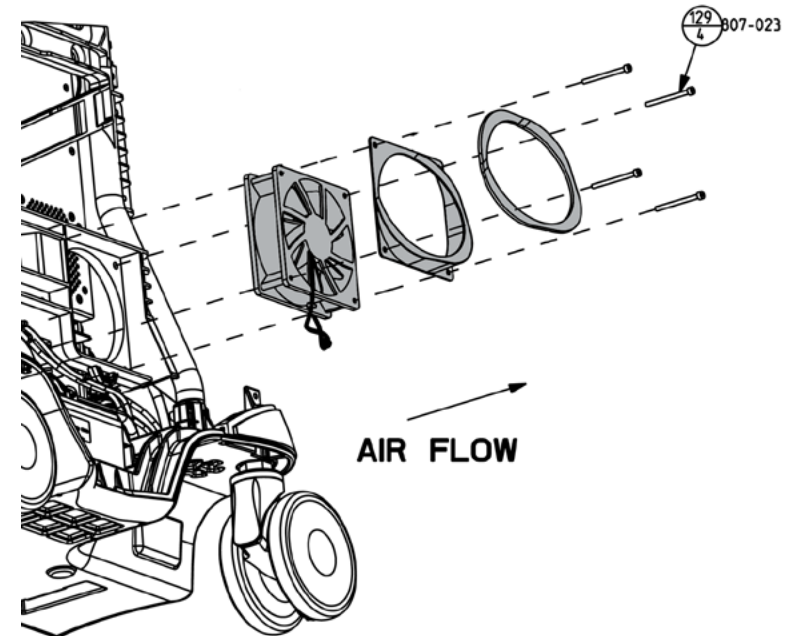


Figure 3-38 Lower Fan Assembly Removal

36. FOOTSWITCH CHARGER PCB (215-2008-55x)

(This step not applicable to Silver systems.)

- 36.1 Remove Upper and Lower Rear Panel.
- 36.2 Disconnect J1 and J2 from Footswitch Charger PCB.
- 36.3 Remove 7 mm nut and star washer securing cable clamp for W147 to panel (see [Figure 3-39](#)).
- 36.4 Remove four 3 mm hex screws and black retainers securing Footswitch Charger PCB to panel.

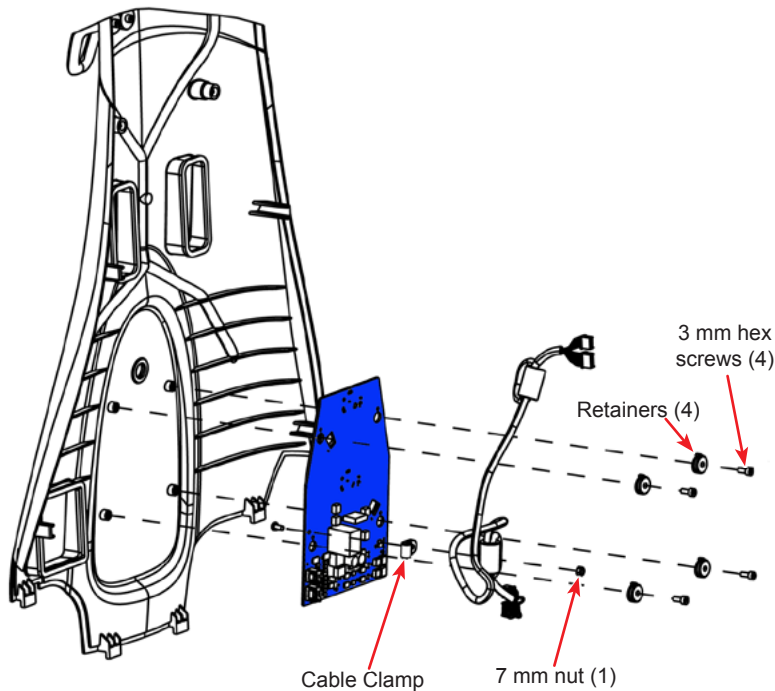


Figure 3-39 Footswitch Charger PCB Removal

37. DISPLAY ASSEMBLY (215-2815-00x)

- 37.1 Remove Display Wrap Handle and Display Bucket.
- 37.2 Cut three tie wraps securing cables W104-CNP1, W103-P2 and P4, and W126-P1 to Display Assembly (see [Figure 3-40](#)).
REPLACEMENT: Note cable routing as shown in [Figure 3-40](#).

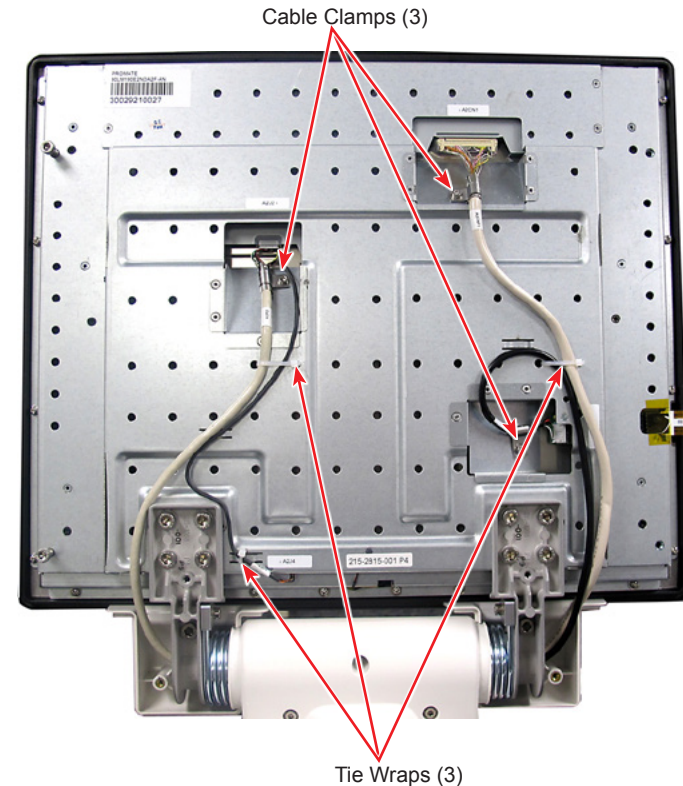


Figure 3-40 Display Cable Routing

- 37.3 Remove three 2.5 mm hex screws securing cable clamps to Display Assembly.
- 37.4 Carefully disconnect CNP1 (squeeze latch on each side to release), P2, P4, and P1 from Display Assembly. **NOTE: A thin blade screwdriver will aid in loosening connector as shown in [Figure 3-41](#).**

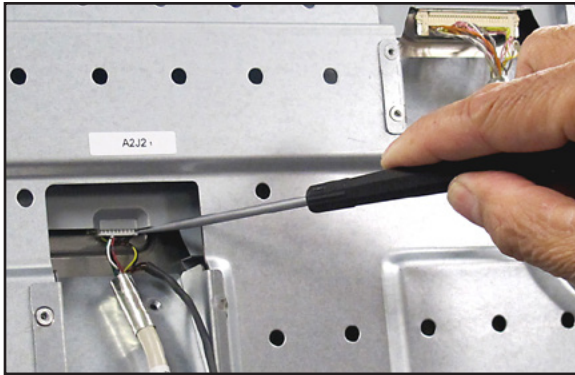


Figure 3-41 Display Connector Removal

- 37.5 Place Display in the stored position with a piece of the foam packaging from new Display under the old Display as shown in [Figure 3-42](#).



Figure 3-42 Display Supported by Foam Packaging

- 37.6 Remove eight 5 mm hex screws securing Display Assembly to console (see [Figure 3-43](#)). **NOTE: Hinge covers will come off when display is removed.**

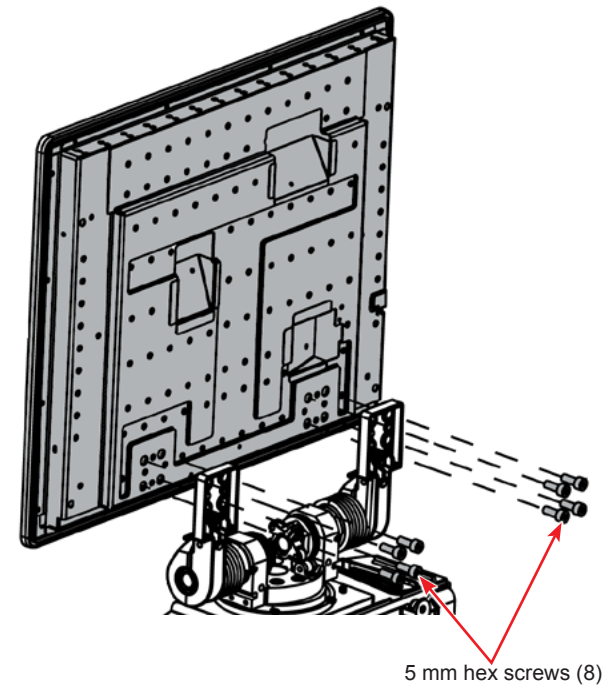


Figure 3-43 Display Removal

DISPLAY REPLACEMENT NOTES:

- Install eight 5 mm screws but do not tighten until hinge covers are in position as shown in [Figure 3-44](#).
- Alternately tighten eight 5 mm screws securing Display to hinge.

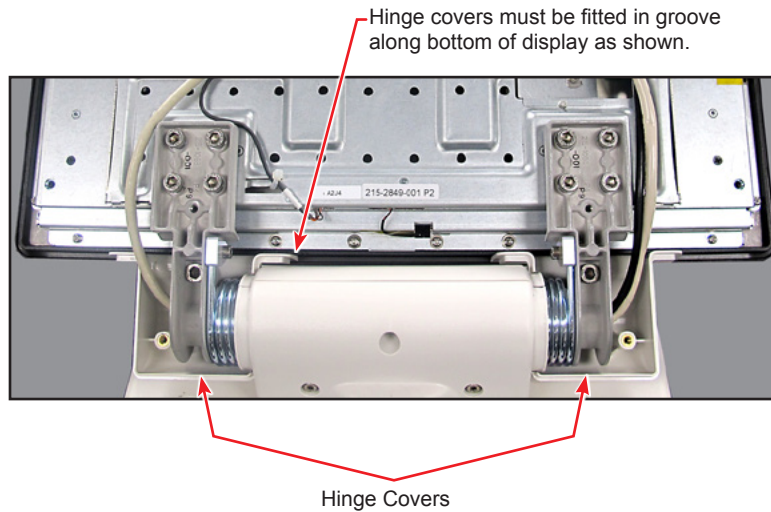


Figure 3-44 Display Hinge Cover Placement

38. BATTERIES (Left and Right)

- 38.1 Remove Upper and Lower Rear Panels.
- 38.2 Remove Front Vent, Upper and Lower Front Panels.
- 38.3 Remove Upper and Lower Left Panels.
- 38.4 Remove Upper and Lower Right Panels.
- 38.5 Remove orange 40 A fuse from MFIO PCB.
- 38.6 Disconnect cables from battery (see [Figure 3-45](#)).

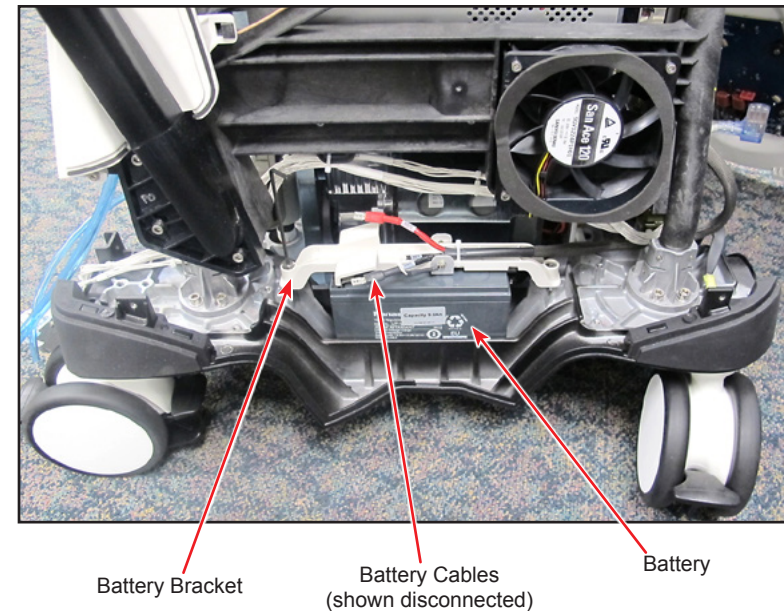


Figure 3-45 Battery Removal

CAUTION

Thermistors are attached to the battery brackets. Use care not to damage thermistors when handling brackets.

- 38.7 Remove two 3 mm captive screws securing bracket to chassis.
- 38.8 Move bracket as necessary to gain clearance and remove battery from console.

REPLACEMENT: Batteries must be replaced as a set. When turning the system on after battery replacement, go to the Service Screen/Log/Record Event and click on "Console Battery Replace" to record this event in the system service history.

39. PNEUMATIC PUMP ASSEMBLY (215-1027-50x)

- 39.1 Remove Upper and Lower Rear Panels.
- 39.2 Remove Front Vent, Upper and Lower Front Panels.
- 39.3 Remove Upper and Lower Left Panels.
- 39.4 Remove Upper and Lower Right Panels.
- 39.5 Remove Front Bumper.
- 39.6 Remove Front Foot Handle Panel.
- 39.7 Disconnect blue pneumatic tubing from Pneumatic Manifold (see [Figure 3-46](#)).

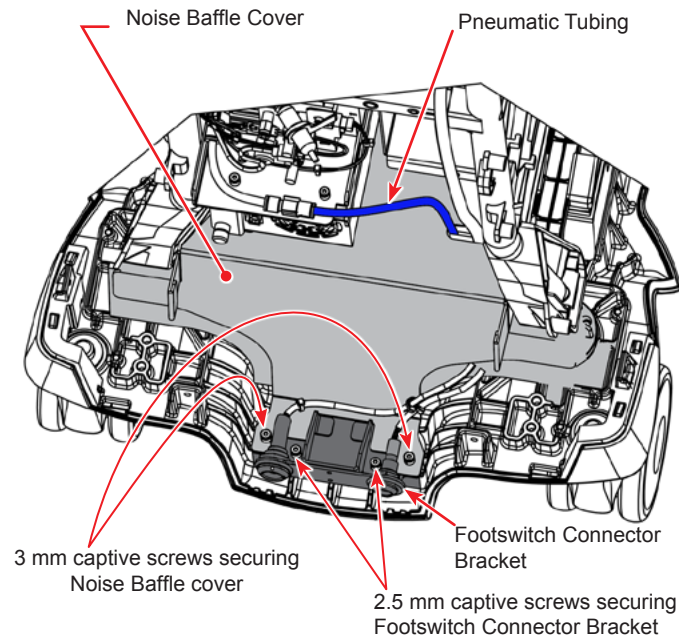


Figure 3-46 Noise Baffle Cover Removal

- 39.8 Loosen two 2.5 mm captive screws securing footswitch connector bracket to chassis.
- 39.9 Loosen two 3 mm captive screws securing Noise Baffle cover to chassis.

- 39.10 Carefully pull Noise Baffle cover from chassis while adjusting tubing and footswitch connector bracket for clearance. Take care not to damage foam insulation attached to the underside of the Noise Baffle cover.
- 39.11 Remove one 2.5 mm hex screw securing Cassette Drain to chassis (see [Figure 3-47](#)). Reposition Cassette Drain to provide clearance for pump removal.

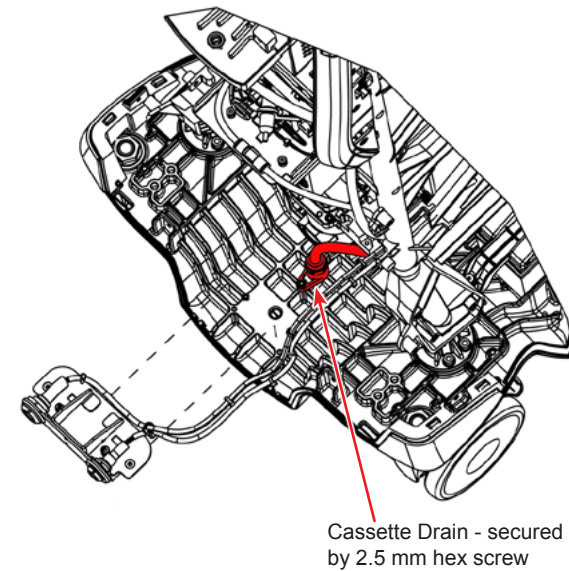


Figure 3-47 Cassette Drain Removal

- 39.12 Remove both batteries per step [38](#).
- 39.13 Disconnect Pump Power connection at J4 on MFIO PCB.
- 39.14 Loosen four 3 mm captive screws securing pump to chassis (see [Figure 3-48](#)).
- 39.15 Reposition pump as necessary and remove from front of console.

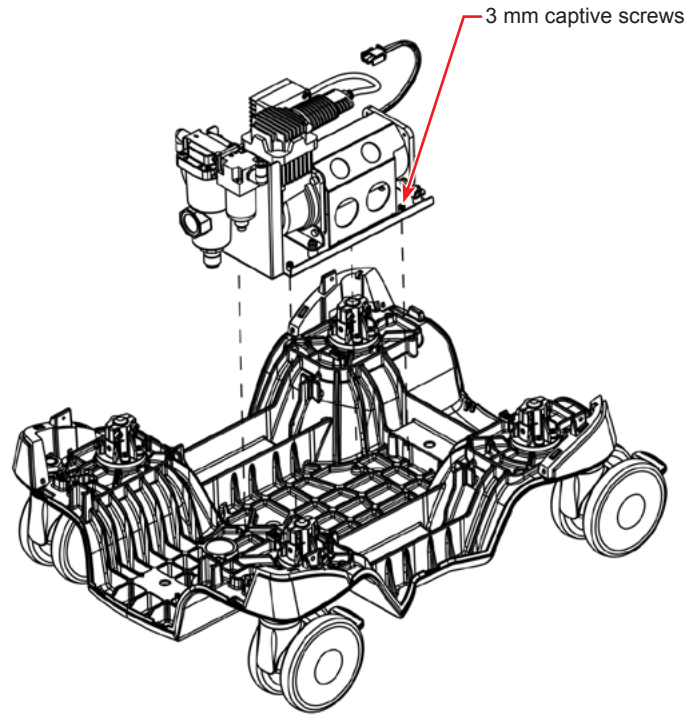


Figure 3-48 **Pneumatic Pump Removal**

40. STANDBY SWITCH (215-2286-50x)

- 40.1 Remove Upper Left Panel.
- 40.2 Disconnect J1 from Standby Switch PCB.
- 40.3 Remove three 3 mm hex screws securing PCB to panel (see [Figure 3-49](#)).

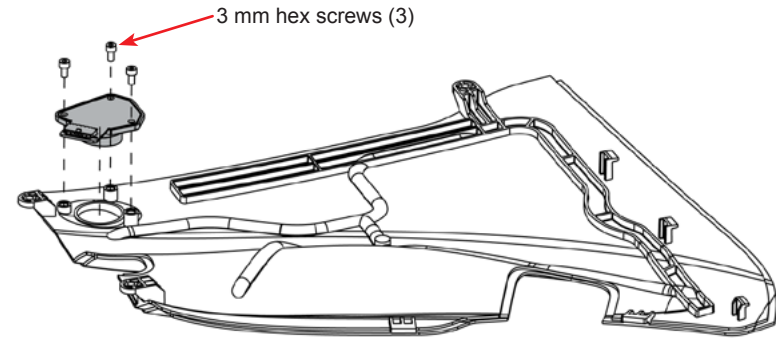


Figure 3-49 **Standby Switch Removal**

- 40.4 Remove Standby Switch from panel.

41. RUBBER BUMPERS

- 41.1 Remove panels listed in table below to gain access to bumper to be replaced. Refer to [Figure 3-50](#) for Bumper location.

Table 3-3 Panel Removal for Rubber Bumper/Caster Access

Bumper/Caster	Panels Removed for Access	
Left Rear	Upper Rear Panel Lower Rear Panel	Upper Left Panel Lower Left Panel
Left Front	Upper Rear Panel Lower Rear Panel Front Vent Panel Upper Front Panel	Lower Front Panel Upper Left Panel Lower Left Panel
Right Rear	Upper Rear Panel Lower Rear Panel	Upper Right Panel Lower Right Panel
Right Front	Upper Rear Panel Lower Rear Panel Front Vent Panel Upper Front Panel	Lower Front Panel Upper Right Panel Lower Right Panel

- 41.2 Pull bumper off tab at each side and remove from chassis.

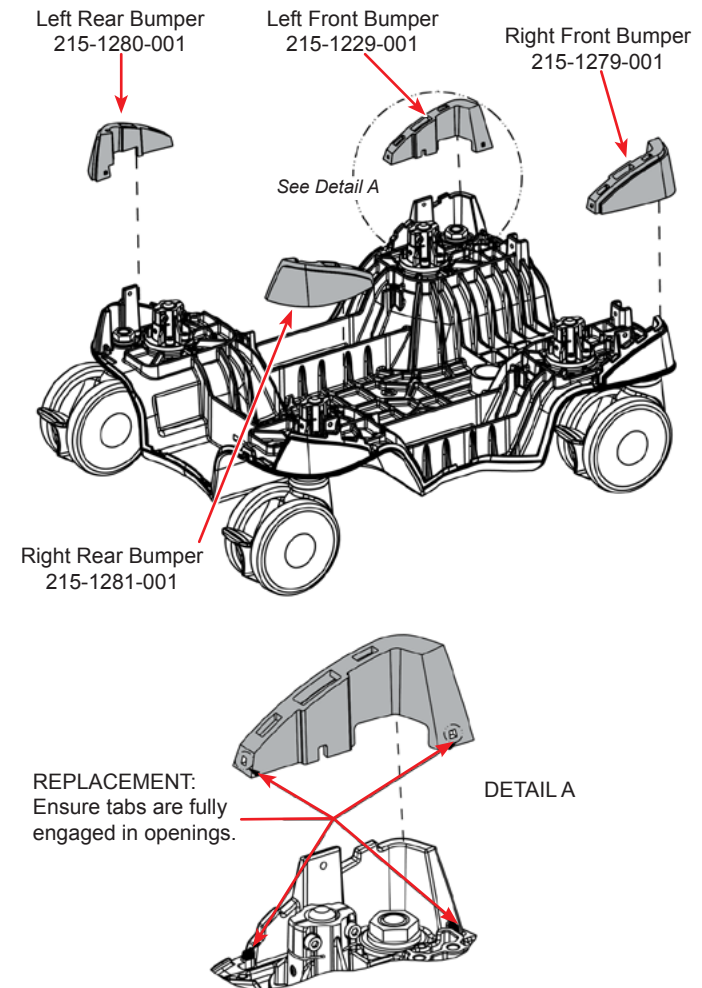


Figure 3-50 Rubber Bumper Removal

42. CASTERS (215-1792-00x)

- 42.1 Remove panels as necessary per [Table 3-3](#) to gain access.
- 42.2 Lock casters opposite the caster to be removed.
- 42.3 Lift side with caster to be removed. and place a solid object under the chassis so that there is enough clearance above floor to remove the caster.
- 42.4 While holding the 27 mm locknut in place, remove the 24 mm nut and washer using a deep 24 mm socket wrench (see [Figure 3-51](#)).

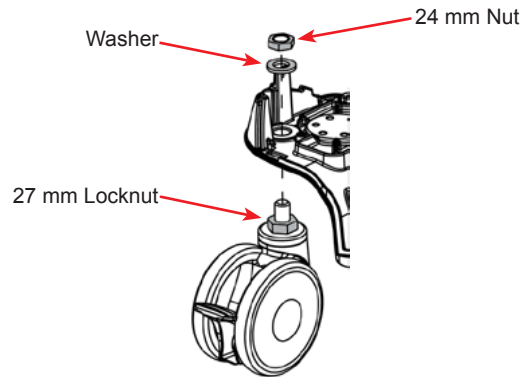


Figure 3-51 Caster Removal

- 42.5 Remove caster from console.

43. PEL Assemblies (215-1457-50x (right); 215-1458-50x (left))

- 43.1 Remove front and upper side panels (left or right as necessary for PEL Assembly to be replaced).
- 43.2 Disconnect cable from PEL PCB.
- 43.3 Remove four 3 mm hex screws and washers securing PEL Assembly to chassis (see [Figure 3-52](#)).

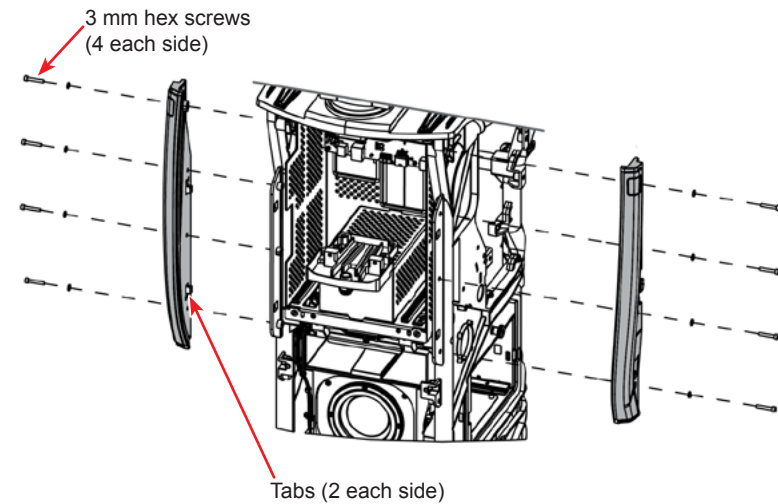


Figure 3-52 PEL Assembly Removal

- 43.4 While holding the Display Insert Panel up for clearance, push PEL Assembly forward until it releases from tabs holding it to chassis.

44. SIDE SPEAKERS (215-1110-00x)

- 44.1 Remove upper and lower rear panels, and upper and lower side panels (left or right as appropriate for speaker to be removed).
- 44.2 Remove four 2 mm hex screws securing speaker/cable assembly to chassis (see [Figure 3-53](#)).

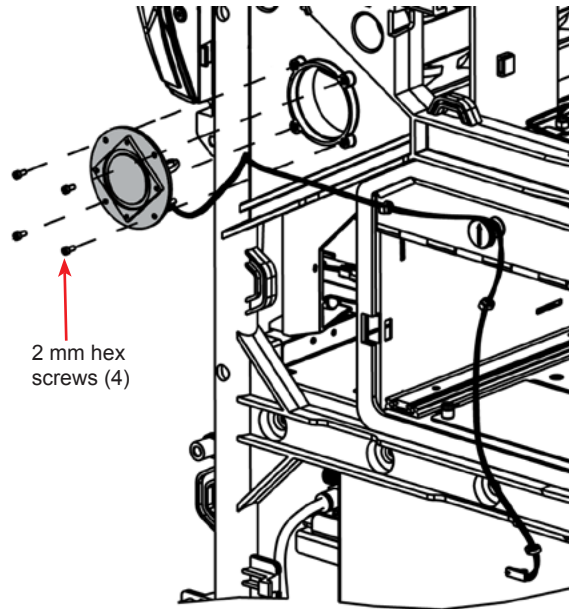


Figure 3-53 Side Speaker Removal

- 44.3 Disconnect connector from J28 (left) or J29 (right) on MFIO PCB.
- 44.4 Cut tie wraps as necessary and remove speaker/cable assembly from console.

45. BASE (215-1219-001)

NOTE: Due to the weight of the system, two people are required to perform this procedure.

- 45.1 Turn off AC power from Power Entry Switch and disconnect AC cord.
- 45.2 Remove the following items per Table 3-1:
 - Upper and Lower Rear Panels
 - Upper and Lower Front Panels
 - Upper and Lower Left Panels
 - Upper and Lower Right Panels
 - Front Bumper.
 - Front Foot Handle
- 45.3 Remove the large blue tubing from the Fluidics Guide (below the Fluidics Module).
- 45.4 Disconnect blue pneumatic tubing from Pneumatic Manifold (tubing is from the pneumatic pump).
- 45.5 Loosen two 3 mm captive screws securing footswitch connector bracket to chassis.
- 45.6 Loosen two 3 mm captive screws securing Noise Baffle cover to footswitch connector bracket (see [Figure 3-46](#)).
- 45.7 Carefully pull Noise Baffle cover from chassis while adjusting tubing and footswitch connector bracket for clearance. Take care not to damage foam insulation attached to the underside of the Noise Baffle cover.
- 45.8 Disconnect W111 P1 from Power Supply and cut two tie wraps securing cable to frame. Move the cable away from frame. See [Figure 3-54](#) for routing of cable during replacement.

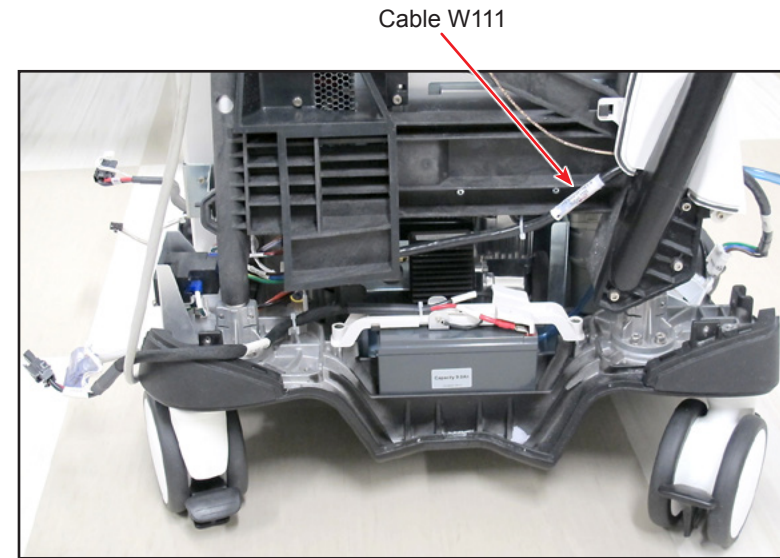


Figure 3-54 Cable W111 Routing Reference

- 45.9 Loosen three 2.5 mm captive screws securing Power Entry Switch assembly to base. Separate assembly from base.
- 45.10 Remove the 40A fuse (F6) on the MFIO PCB.
- 45.11 Disconnect console batteries connectors J15, J27, J24, and J26 on the MFIO PCB.
- 45.12 Disconnect W107 J11 and J21, W108 J20 from MFIO PCB (these cables are from the footswitch connector bracket).
- 45.13 Disconnect W127 J4 from MFIO PCB (this cable is from the Pneumatic Pump).
- 45.14 Remove one 3 mm hex screw securing W181 IV Pole ground cable to base. See [Figure 3-55](#) for screw location.

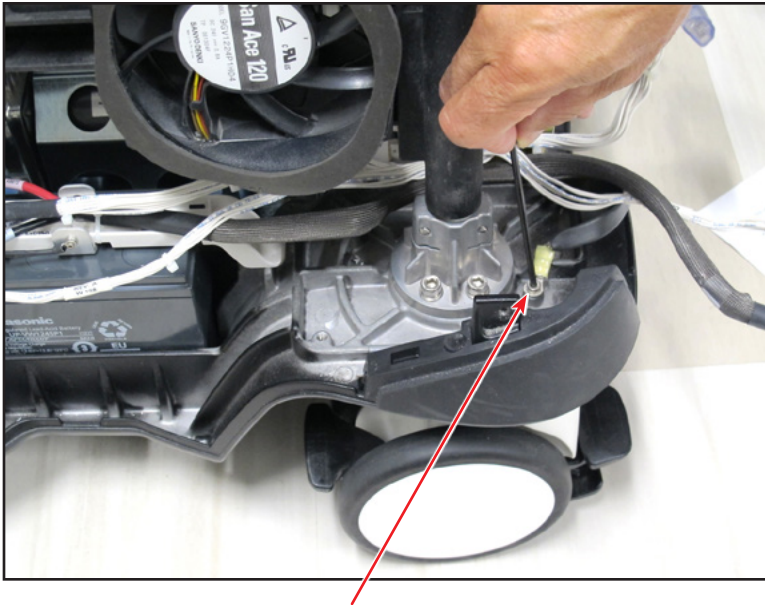


Figure 3-55 IV Pole Ground Screw Location

- 45.15 Remove two 3 mm hex screws securing Cable Load bracket to chassis. See [Figure 3-56](#) for screw location.

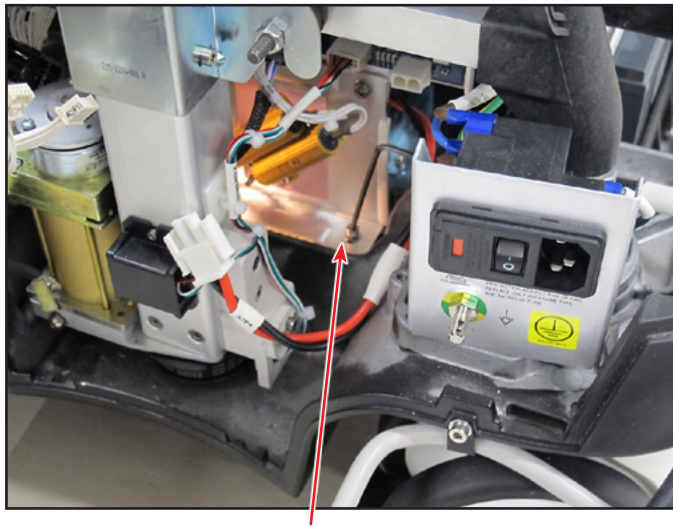


Figure 3-56 Cable Load Bracket Screw Location

- 45.16 Remove sixteen 5 mm hex screws (four screws and washers for each frame foot/stand) securing system frame feet/stands to the Base.
- 45.17 Lock all four casters
- 45.18 With two people, evenly lift the entire system away from the Base and carefully place it on the floor in the upright position as shown in [Figure 3-57](#).

CAUTION

The system will partially rest on the IV pole assembly and has a higher probability of tipping in this position.



Figure 3-57 System removed from base.

45.19 Remove the following items from the old base and install them to the new base (refer Table 3-1). [Figure 3-58](#) is provided as reference.

- Two console batteries and their brackets
- Pneumatic Pump
- Four rubber bumpers
- Four casters
- Cassette Drain secured by one 2.5 mm hex screw.
- Cut tie wraps as necessary and transfer cables to new base.

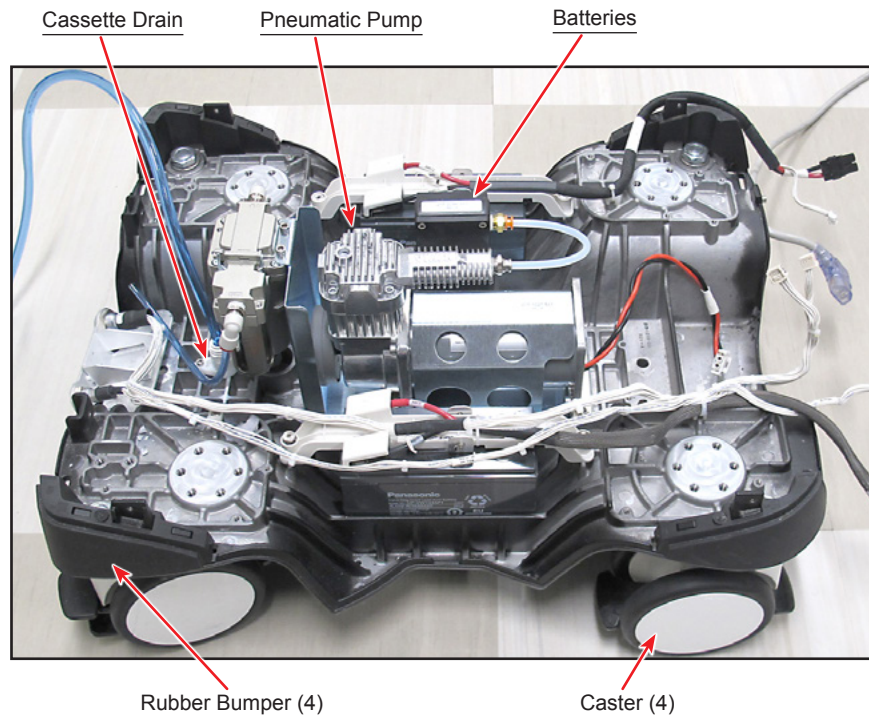


Figure 3-58 Reference Photo of Base

45.20 On the console, loosen two 3mm screws securing the cable load bracket to the bottom of the MFIO PCB assembly (see [Figure 3-59](#)). This will allow for fitting adjustments when attaching the new base. Be sure to adjust for proper fit and re-tighten when new base is attached.

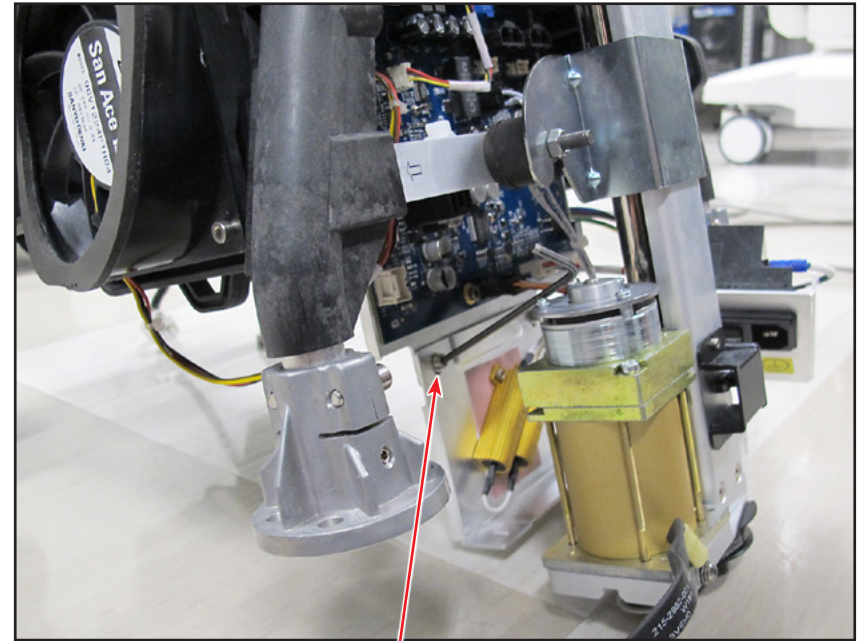


Figure 3-59 Load Bracket Screws

46. DRAWER SLIDE LEVEL TRAVEL DISASSEMBLY (215-1784-001)

- 46.1 Remove the Drawer.
- 46.2 Remove the following items per Table 3-1:
 - Lower Front Panel
 - Lower Left Panel
 - Host Module
 - Pneumatic Main Manifold Assembly
- 46.3 Remove two 7 mm nuts securing each Drawer Slide Level Travel Assembly to chassis (see [Figure 3-60](#)). Nuts are accessed from underside the drawer assembly.
- 46.4 Remove each Drawer Slide Level Travel Assembly.

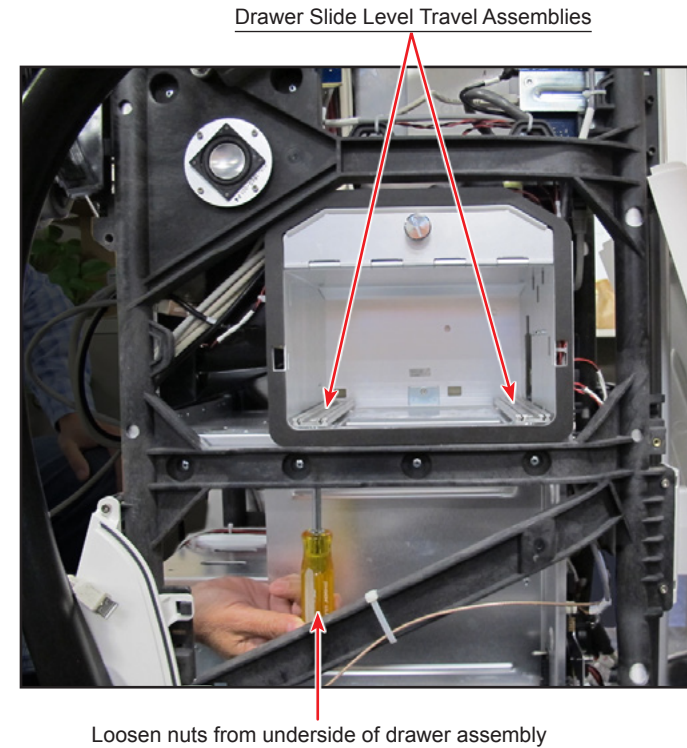


Figure 3-60 Location of Nuts Securing Drawer Slide Level Travel Assembly to Chassis

FOOTSWITCH DISASSEMBLY

47. FOOTSWITCH BATTERY (215-2064-00X)

- 47.1 Remove seven 4 mm hex screws securing Base to main housing (see [Figure 3-61](#)). Remove Base.

REPLACEMENT: Start all screws before tightening.

- 47.2 Disconnect Battery from J2 on Footswitch PCB. Remove Battery.

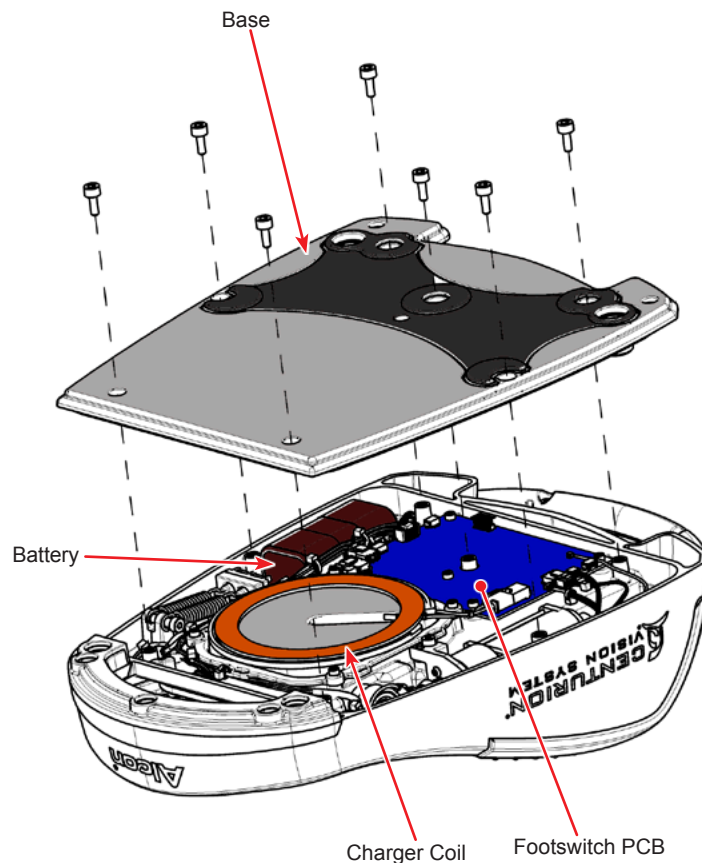


Figure 3-61 Footswitch Base Removal

48. FOOTSWITCH CHARGER COIL (215-2983-00X)

- 48.1 Remove seven 4 mm hex screws securing Base to main housing (see [Figure 3-61](#)). Remove Base.

REPLACEMENT: Start all screws before tightening.

- 48.2 Disconnect Charger Coil from J18 on Footswitch PCB. Remove Charger Coil.

49. FOOTSWITCH WING COVERS (Left: 215-3237-00X; Right: 215-3236-00X)

- 49.1 Remove seven 4 mm hex screws securing Base to main housing (see [Figure 3-61](#)). Remove Base.

REPLACEMENT: Start all screws before tightening.

- 49.2 Remove Battery and Charger Coil as directed in previous steps. These items are not secured to the footswitch (connected to PCB) and will fall out when footswitch is turned over.

- 49.3 From underside of footswitch, remove one 2.5 mm hex screws securing each Cover to main housing (see [Figure 3-62](#)).

NOTE: The right Wing cover has a washer between the cover and the footswitch base.

- 49.4 Turn footswitch over and remove three 2.5 mm hex screws securing Cover to main housing.

- 49.5 Remove Cover from footswitch, repositioning as necessary to slide it forward until it clears the footpedal. If removing the Right Cover, feed the connector plug assembly through the hole in the Cover prior to sliding it along the footpedal.

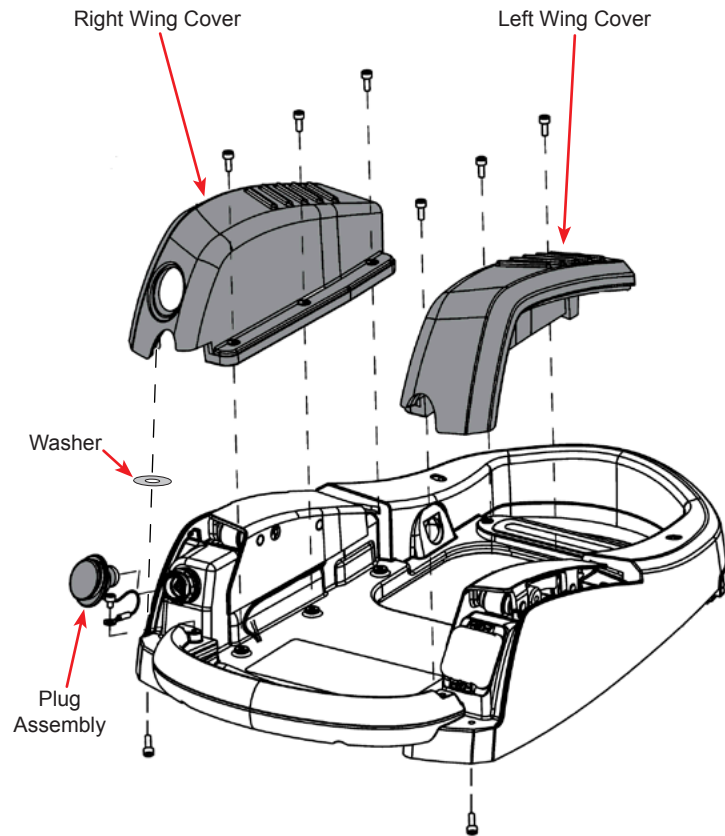


Figure 3-62 Footswitch Wing Covers and Connector Plug Assembly (shown without footpedal)

50. FOOTSWITCH PLUG ASSEMBLY (215-1016-50X)

- 50.1 Remove seven 4 mm hex screws securing Base to main housing (see [Figure 3-61](#)). Remove Base.
REPLACEMENT: Start all screws before tightening.
- 50.2 Remove Battery and Charger Coil as directed in previous steps. These items are not secured to the footswitch (connected to PCB) and will fall out when footswitch is turned over.
- 50.3 Remove Right Wing Cover per step [49](#).
- 50.4 Note position of lanyard, then remove 2.5 mm hex screw securing Plug Assembly to chassis. Remove Plug assembly.

51. FOOTSWITCH PCB (215-1454-55X)

- 51.1 Remove seven 4 mm hex screws securing Base to main housing (see [Figure 3-61](#)). Remove Base.
REPLACEMENT: Start all screws before tightening.
- 51.2 Disconnect connectors from PCB at:
 - J2 -> W264 to Battery
 - J5 -> W260_1 & _2 to Left Switch
 - J6 -> W260_3 & _4 to Right Switch
 - J11 -> W266 to UP SWITCH PCB, LED PCB's
 - J12 -> W265 to Encoder
 - J13 -> W203 to Motor
 - J14 & J20 -> W267 to Console Connector
 - J18 -> W233 to Charger Coil
 - J21 -> W268 to Antenna
- 51.3 Remove five 2.5 mm hex screws securing Footswitch PCB to housing.
REPLACEMENT: Start all screws before tightening.
- 51.4 Remove Footswitch PCB from housing.

52. FOOTSWITCH DOMED UPSWITCH PCB ASSEMBLY (215-2834-551)

- 52.1 Set the footswitch to “shipping” mode by pressing and holding (for at least two seconds) the switch shown in [Figure 3-63](#) with a cotton swab or other instrument that can reach the recessed switch without damaging the rubber covering.



Figure 3-63 Location of Shipping Mode Switch

- 52.2 Remove seven 4 mm hex screws securing Base to main housing (see [Figure 3-64](#)). Remove Base.
REPLACEMENT: Start all screws before tightening.

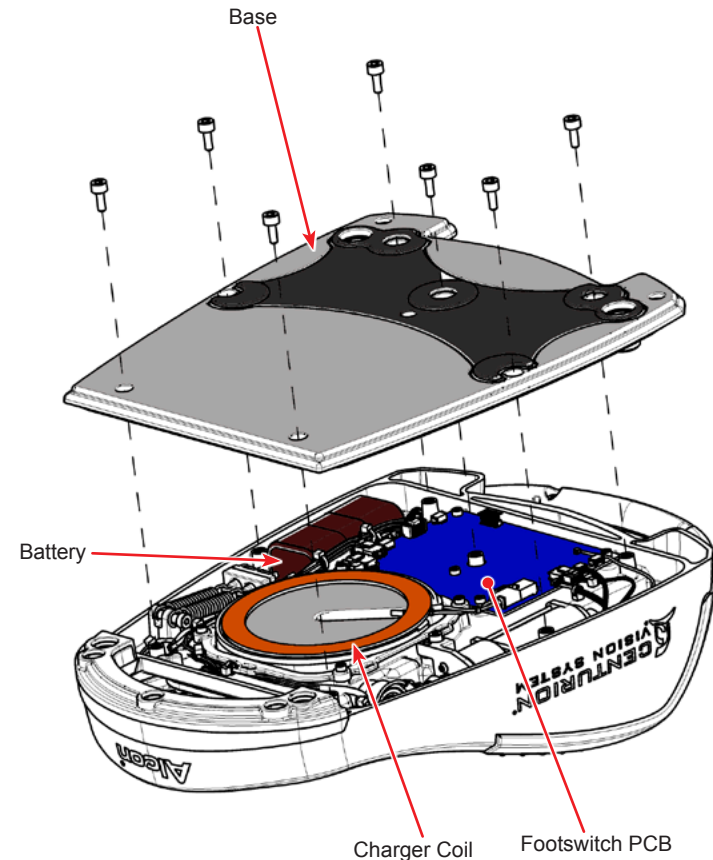


Figure 3-64 Footswitch Base Removal

- 52.3 Remove Battery and Charger Coil as detailed in the steps below. These items are not secured to the footswitch (connected to PCB) and will fall out when footswitch is turned over.
- 52.3.1 Disconnect Battery from J2 on Footswitch PCB. Remove Battery.
- 52.3.2 Disconnect Charger Coil from J18 on Footswitch PCB. Remove Charger Coil.
- 52.4 Remove four 2.5 mm securing the Inner Cover (see [Figure 3-65](#)). Remove Inner Cover with O-Ring attached to it and Pressure Pad.

2.5 mm hex screws securing Inner Cover

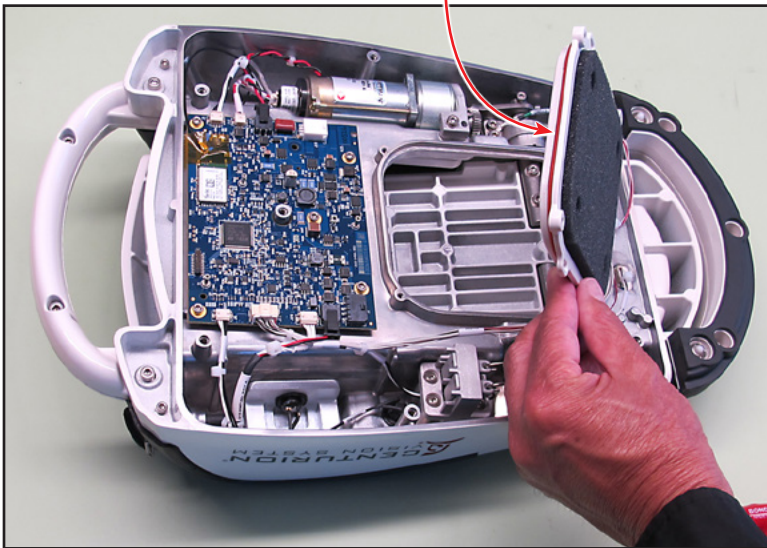
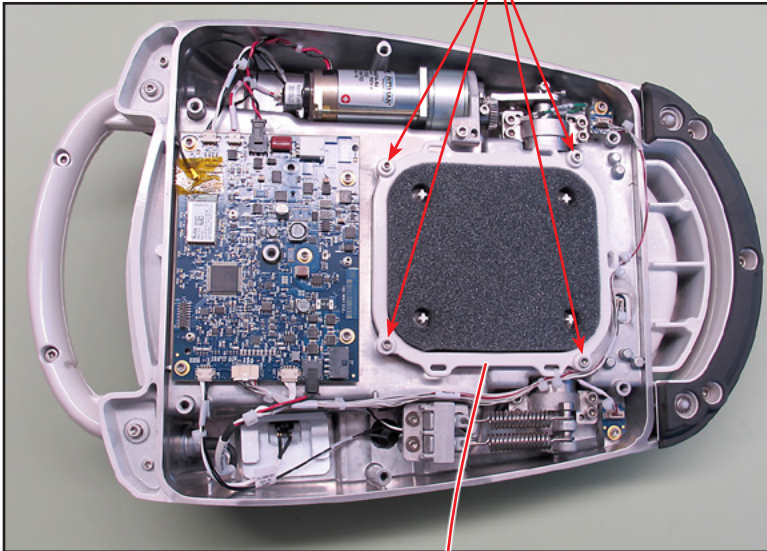


Figure 3-65 Removal of Footswitch Inner Cover

52.5 While using a screwdriver to hold the spring-loaded shaft in place as shown in [Figure 3-66](#), remove the two 3 mm screws (closest to the spring) securing the treadle to the spring-loaded shaft.

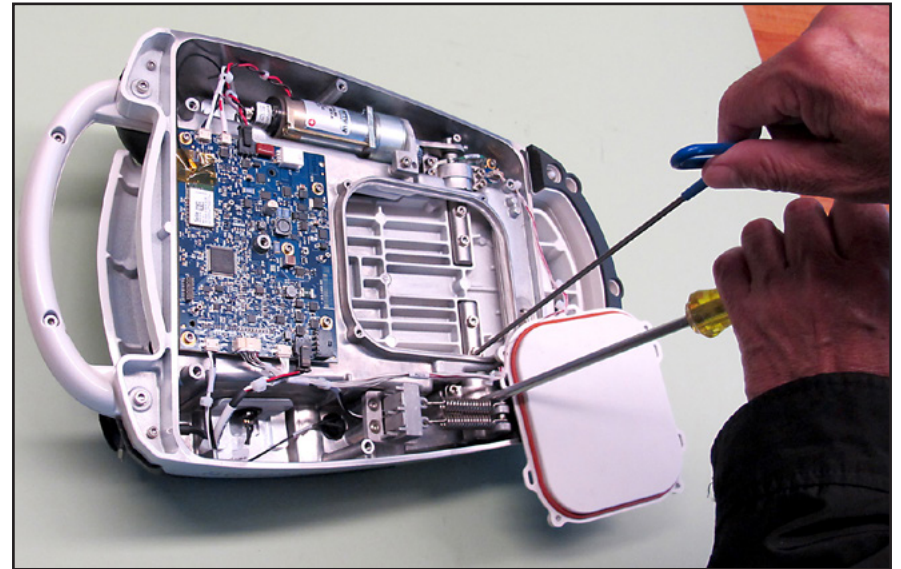


Figure 3-66 Removing the Treadle from the Spring-Loaded Shaft

52.6 Remove the remaining two 3 mm screws securing the treadle to the shaft.

52.7 Remove the treadle.

- 52.8 Use a marker to make a reference line marking the position of the Domed Upswitch PCB Assembly to the main housing (see [Figure 3-67](#)).



Figure 3-67 The Domed Upswitch PCB Assembly Secured to the Main Housing

- 52.9 Remove two 2.5 mm screws securing the Domed Upswitch PCB assembly to the Footswitch Housing.
- 52.10 Lift assembly from footswitch housing and disconnect connector shown in [Figure 3-68](#). The assembly includes the Topout Frame, Topout Diaphragm, and Domed Upswitch PCB (see [Figure 3-69](#)).

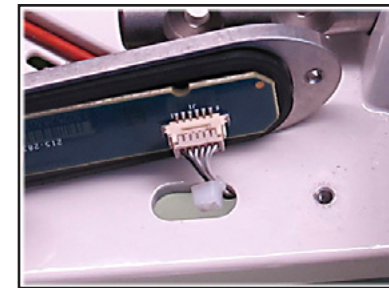


Figure 3-68 Domed Upswitch PCB Connector

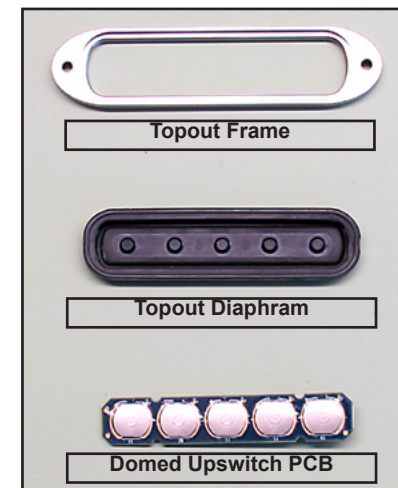


Figure 3-69 Domed Upswitch Assembly Components

- 52.11 Replace the Domed Upswitch PCB and install the assembly to the main footswitch housing in the same position as indicated by the reference line.
- 52.12 Install the remaining items in reverse order.

MODULE LEVEL DISASSEMBLY

53. Fluidic Module Hub Roller Assembly

- 53.1 Remove Fluidics Module per step [18](#).
- 53.2 Place Fluidics Module on a secure location as shown in [Figure 3-70](#).
- 53.3 Insert a 2 mm Allen wrench to the access hole and manually rotate Hub Roller until the tip of the 2 mm Allen wrench is lined up with Hub Roller locking screw (see [Figure 3-71](#)).
Note: You cannot see the Hub Roller locking screw but rotating the Hub Roller will eventually allow the tip of Allen wrench to drop into the Hub Roller locking screw.
- 53.4 Loosen Hub Roller locking screw approximately two full turns then remove the Allen wrench.
- 53.5 Remove Hub Roller by pulling it straight out from the Fluidics Module (see [Figure 3-72](#) where two needle-nosed pliers are used to pull hub rollers).
- 53.6 Install the replacement Hub Roller in reverse order.

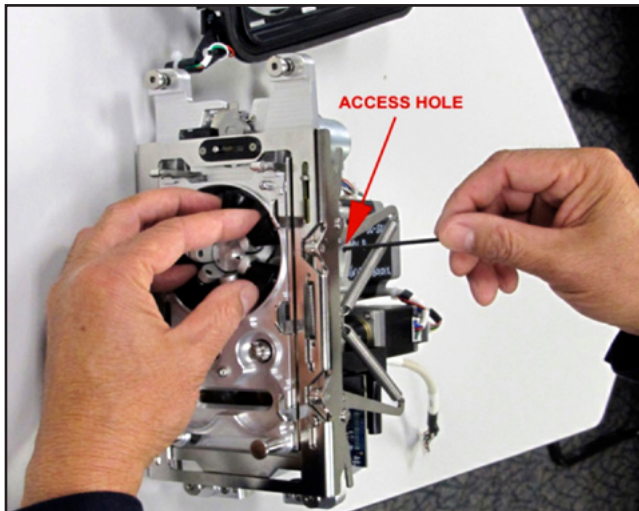


Figure 3-70 Loosening the Hub Roller Locking Screw

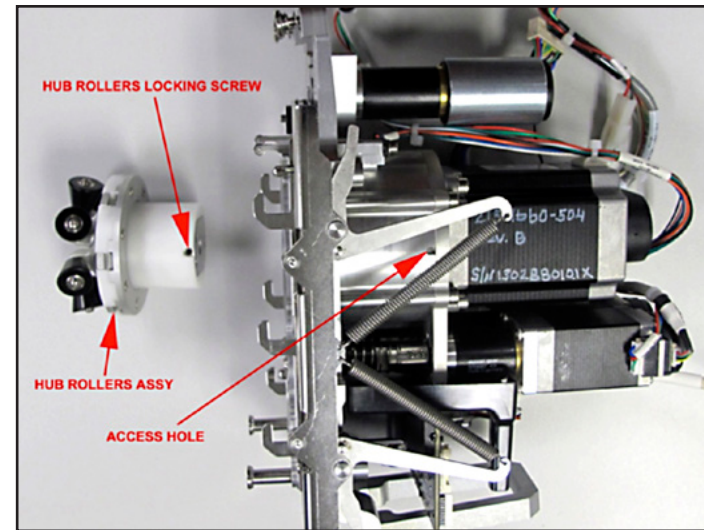


Figure 3-71 View of Hub Roller Removed from Fluidics Module

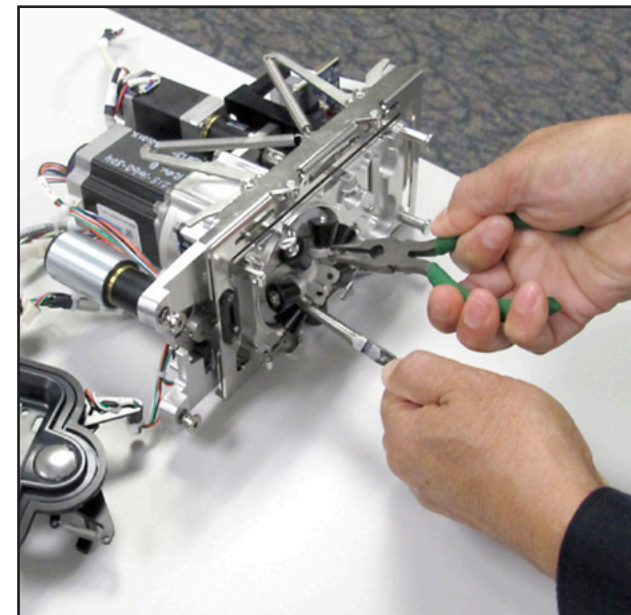


Figure 3-72 Removing Hub Roller from Fluidics Module

NOTE: Hub Rollers assembly P/N 215-3254-502 was released in January 2015 with a cut in system serial number of 150102601X. This new Hub Rollers assembly was released to eliminate the need for adding a spacer/shim to the Hub Rollers assembly shaft. Therefore, installing the new Hub Rollers assembly on systems below serial number 150102601X, requires removal of the spacer/shim prior installing Hub Rollers assembly (see [Figure 3-73](#)). Conversely, installing the old Hub roller assembly on systems with serial number 150102601X and above requires the installation of the spacer/shim (PN 215-3127-003).



Figure 3-73 Removal of Spacer/Shim from Hub Rollers Assembly

54. Fluidics Latch Springs

- 54.1 Remove Fluidics Module per step [18](#).
- 54.2 Place Fluidics Module on a secured location as shown in [Figure 3-70](#).
- 54.3 Using a permanent felt marker, draw a line on all four fluidics latch springs as shown in [Figure 3-74](#). This will prevent mixing up the old springs with the replacement springs.



Figure 3-74 Marking the Fluidics Latch Springs

- 54.4 Remove all four latch springs and place them outside the work area to prevent mixing with replacement springs. It is recommended to remove the springs from the latching mechanism using small locking pliers as shown in [Figure 3-75](#).

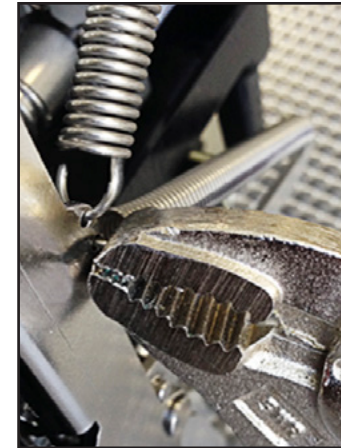


Figure 3-75 Latch Spring Removal

CAUTION

- **Do not over-extend the springs during removal and installation.**
 - **Also, take care to not bend the spring latch arms.**
- 54.5 Install replacement latch springs with the open end of the hook towards the module as shown in [Figure 3-75](#).
NOTE: It is recommended to use locking pliers and pull the spring towards the main part of the latching mechanism as shown in [Figure 3-75](#).
 - 54.6 Install the Fluidics Module and Fluidics PCB assembly back into the console. Reassemble the console.

55. Fluidics Bezel

- 55.1 Remove Fluidics Module per step [18](#).
- 55.2 Separate Fluidics Bezel from module by pulling it straight out from Fluidics Module. The Bezel is still attached to the module by cable W115.
- 55.3 Remove two 2.5 mm hex screws securing sensor CR2 to Fluidics chassis ([Figure 3-76](#)).
- 55.4 Remove 2.5 mm hex screw securing CR1 sensor to Fluidics Module chassis. Pull sensor away from module.
- 55.5 Disconnect cable W115 from Fluidics PCB at connector J9.
- 55.6 Cut tie wrap securing cable W115 to Fluidics Module.
- 55.7 Remove Bezel from Fluidics Module

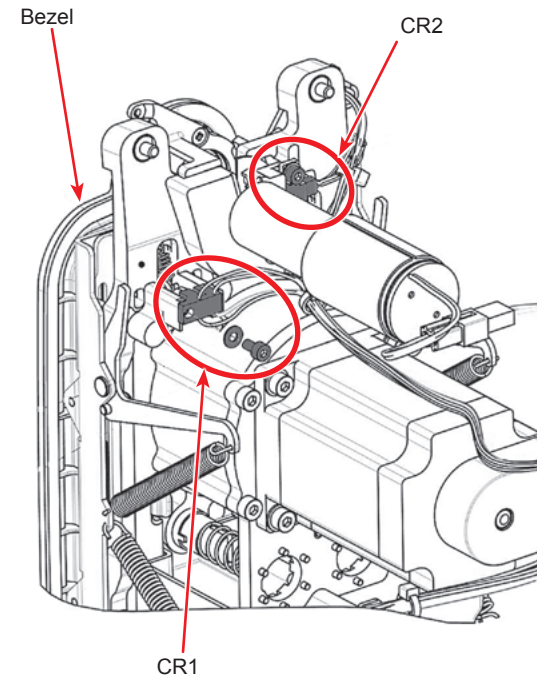


Figure 3-76 CR3 Sensor Cable Removal

56. Fluidics Front Clamping Bracket (215-3410-50x)

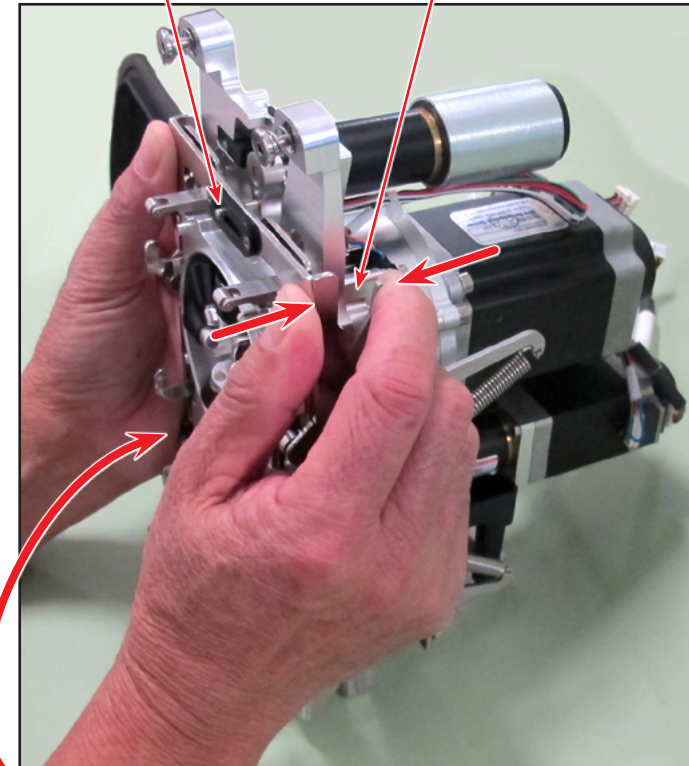
- 56.1 Remove Fluidics Module per step [18](#).
- 56.2 Place Fluidics Module on a secure location.
- 56.3 Place hands on both sides of Clamp Bracket as shown in [Figure 3-77](#). Place right thumb on upper right corner and left thumb on upper left corner. Place index fingers on the upper right/left Top Clamp Roller Hinges and squeeze. While squeezing, slightly use your palms to push in the lower part of the Clamp Bracket, and pull the Top Clamp Bracket outward (toward yourself) until the Latch Motor drive wheel pin is clear from the slot and the Clamp Bracket can be lowered and removed from the module.

NOTE: When pulling Clamp Bracket away from module, be aware that the four springs and spring cups behind the Clamp Bracket may fall off the housing.

- 56.4 REPLACEMENT:
 - 56.4.1 When installing Clamp Bracket, ensure the Latch Motor drive wheel pin touches the top Clamp Bracket (close to the slot that the wheel pin will come in).
 - 56.4.2 Using the same technique mentioned in step [56.3](#) to install the Clamp Bracket so the wheel pin will be inserted to the slot.

Latch motor drive pin must clear slot in order for clamp to release from module.

Squeeze Clamp and Clamp roller hinges.



With both palms, push lower part of clamp bracket inward.

Figure 3-77 Clamp Bracket Removal

57. Active Irrigation (AI) Load Cable Assembly (215-3344-001) Removal (This step not applicable to Silver systems)

- 57.1 Remove AI Module per step [21](#).
- 57.2 Remove three $\frac{7}{64}$ " hex mounting screws securing AI Load Cable Assembly to Pressure Sensor Assembly (see [Figure 3-78](#)). **REPLACEMENT:** Tighten mounting screws evenly but do not over-tighten..
- 57.3 Remove 2.5 mm hex screw and washer securing cable clamp to AI module.
- 57.4 Remove AI Load Cable Assembly from AI Module.

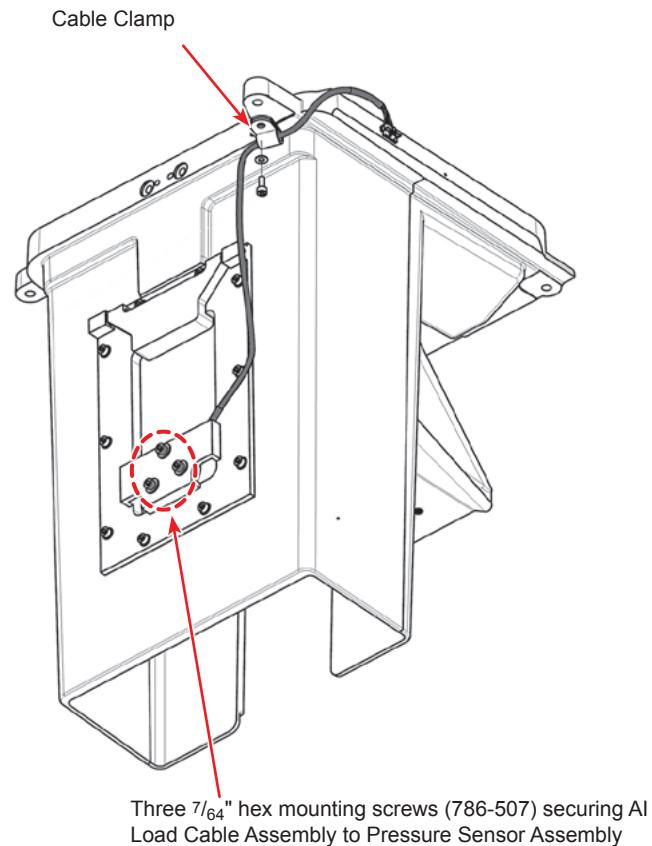


Figure 3-78 Active Irrigation Load Cable Assembly Removal from AI Module

58. Bag ID Reader PCB Assembly Removal (215-2931-501) (This step not applicable to Silver systems)

- 58.1 Remove Active Irrigation Module per step [21](#).
- 58.2 Remove four 2.5 hex screws and washers securing Bag ID Reader PCB to AI Module (see [Figure 3-79](#)).

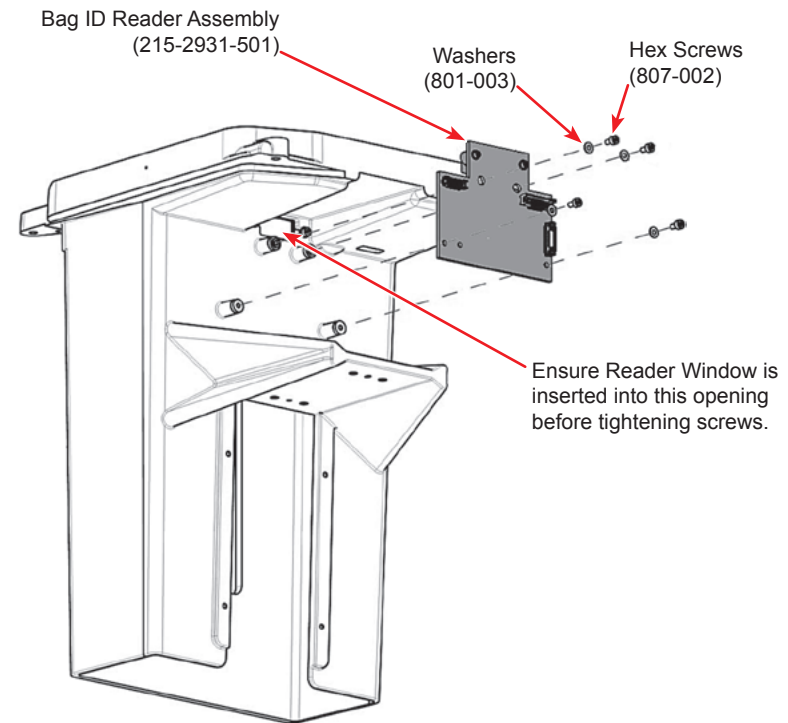


Figure 3-79 Active Irrigation Bag ID Reader PCB Removal

- 58.3 Remove Bag ID Reader PCB Assembly by pulling it straight out and away from AI Module.
- REPLACEMENT:** Ensure the Reader Window is inserted into the opening slot before tighten mounting screws.

59. Pneumatic Front Manifold (215-1366-501)

- 59.1 Remove Fluidics Controller Assembly (215-1007-50X) per step [18](#).
- 59.2 Disconnect four connectors from the Fluidics Controller PCB: J10, J11, J14, and J15.
- 59.3 Remove two 2 mm hex screws and two washers securing Fluidics Controller PCB to the Connector Panel.
- 59.4 Remove two Pneumatic tubings (blue and yellow) from the Pneumatic Front Manifold.
- 59.5 From the Connector Panel, remove three 3 mm hex screws, three washers, six bushings, securing Pneumatic Front Manifold (see [Figure 3-80](#)).
- 59.6 Remove Pneumatic Front Manifold.

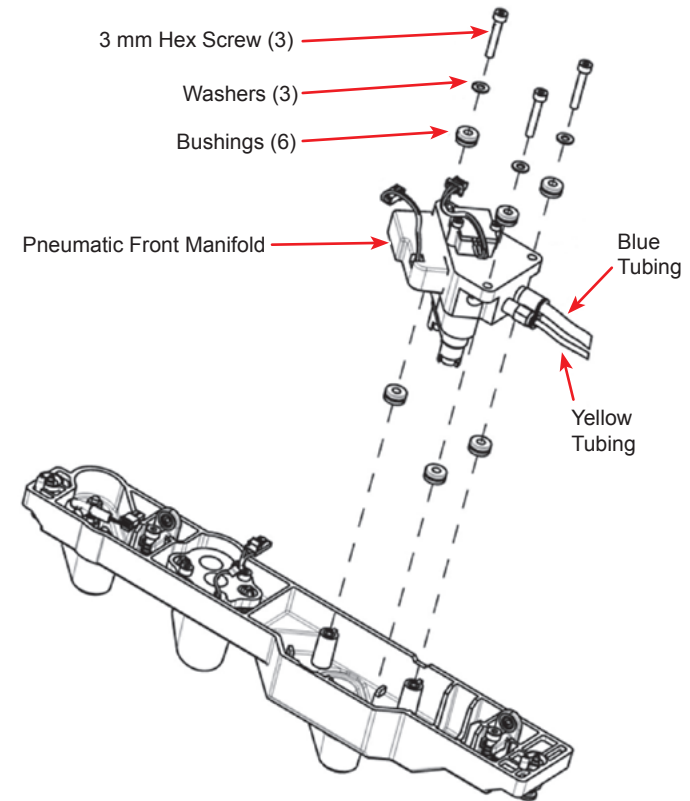


Figure 3-80 Pneumatic Front Manifold Removal

60. Pneumatic Fitting Sleeve and Core Removal

- 60.1 Using a 1/8 inch hex wrench, loosen the Pneumatic Fitting and remove from connector panel (see [Figure 3-81](#)). Both the Fitting Core and Fitting Sleeve should come out.

REPLACEMENT: Ensure that Fitting Sleeve "cut-out" groove is properly fitted on the guide pin in the hole before tightening the Fitting in place.

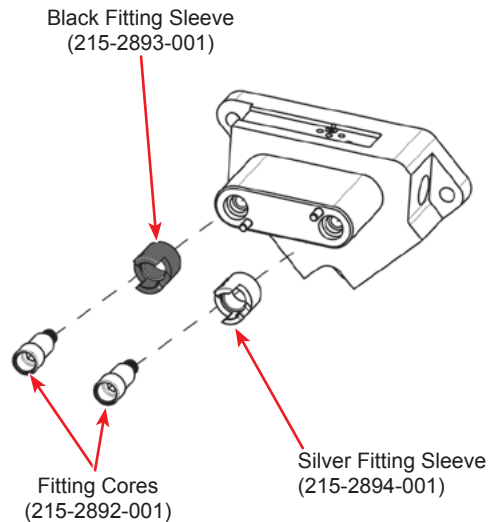


Figure 3-81 Pneumatic Fittings Removal

61. Coagulation Banana Jacks 063-047

- 61.1 Remove Fluidics Controller Assembly per step [18](#).
 61.2 Disconnect four connectors from the Fluidics Controller PCB: J10, J11, J14, and J15.
 61.3 Remove two 2 mm hex screws and two washers securing Fluidics Controller PCB to the connector panel.
 61.4 From the connector panel, remove nuts and washers securing Coag Connector Cable to two banana jacks (see [Figure 3-82](#)).

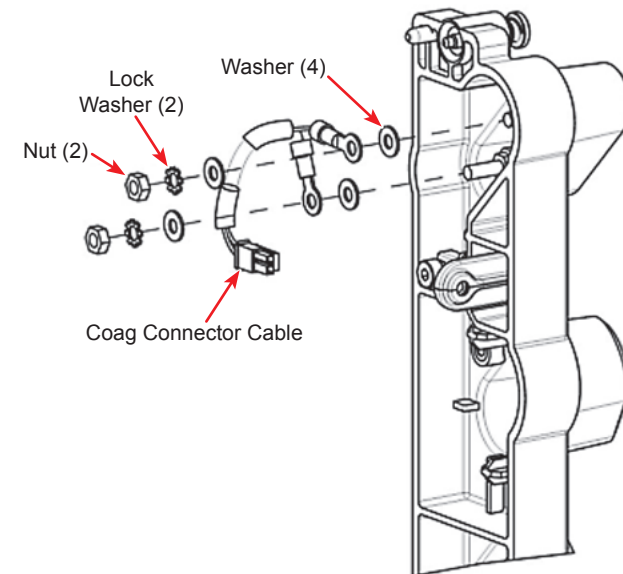


Figure 3-82 Removal of Coag Cable

- 61.5 Remove nuts and washers securing two banana jacks to panel housing using fixtures/tools 995-2150-201 and 995-2150-202 shown in [Figure 3-83](#).

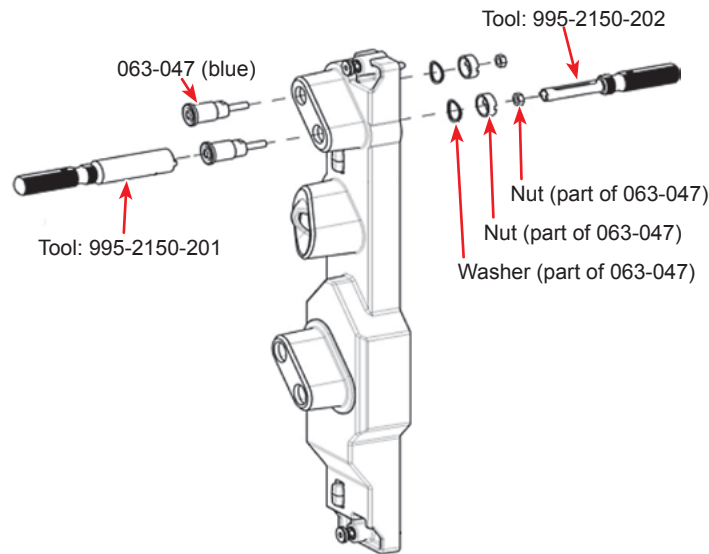


Figure 3-83 Coag Connectors Removal

62. *Infiniti** U/S Handpiece Cable Assembly (215-2957-501) Removal

- 62.1 Remove Ultrasonics (U/S) PCB Assembly per step [19](#).
- 62.2 Remove two 2 mm hex screws and washers securing Ultrasonics PCB to the assembly.
- 62.3 On the connector panel, remove nut securing *Infiniti* U/S Handpiece Cable Assembly (215-2957-001) using tool PN 995-2150-177 (see [Figure 3-84](#)). NOTE: Tool PN 995-2100-106 used on *Infiniti** systems also works for this connector.
- 62.4 Remove *Infiniti** U/S Handpiece Cable Assembly.

REPLACEMENT:

- 62.5 Remove and discard nut and washer from new *Infiniti** U/S Handpiece Cable Assembly.
- 62.6 Install the new *Infiniti** U/S Handpiece Cable Assembly into the connector panel and ensure the red dot of the cable is facing up as shown in [Figure 3-84](#).

- 62.7 Secure cable assembly to connector panel with nut (215-1200-001) using tool 995-2150-177.

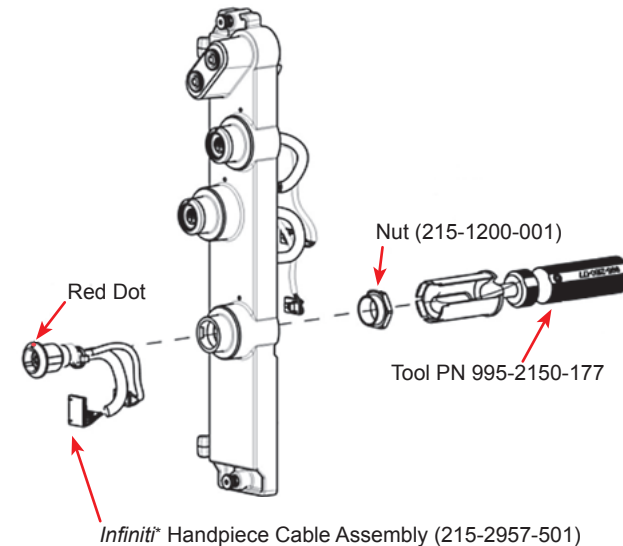


Figure 3-84 *Infiniti Handpiece Cable Assembly Removal**

63. Centurion* U/S Handpiece Cable Assembly

(215-2870-001 for Original; 215-3473-001 & 215-3474-001 for Silver & AS)

- 63.1 Remove Ultrasonics (U/S) PCB Assembly per step [19](#).
 - 63.2 Remove two 2 mm hex screws and washers securing Ultrasonics PCB to the assembly.
 - 63.3 On the connector panel, remove nut securing U/S Handpiece Cable Assembly using tool PN 995-2150-177 as shown in [Figure 3-85](#). NOTE: Tool PN 995-2100-106 used on *Infiniti** systems also works for this connector.
 - 63.4 Remove U/S Handpiece Cable Assembly.
- REPLACEMENT:**
- 63.5 Remove nut from new U/S Handpiece Cable Assembly.
 - 63.6 Install the new U/S Handpiece Cable Assembly into the connector panel and ensure the red dot of the cable is facing up as shown.
 - 63.7 Secure cable assembly to connector panel with nut using tool PN 995-2150-177.

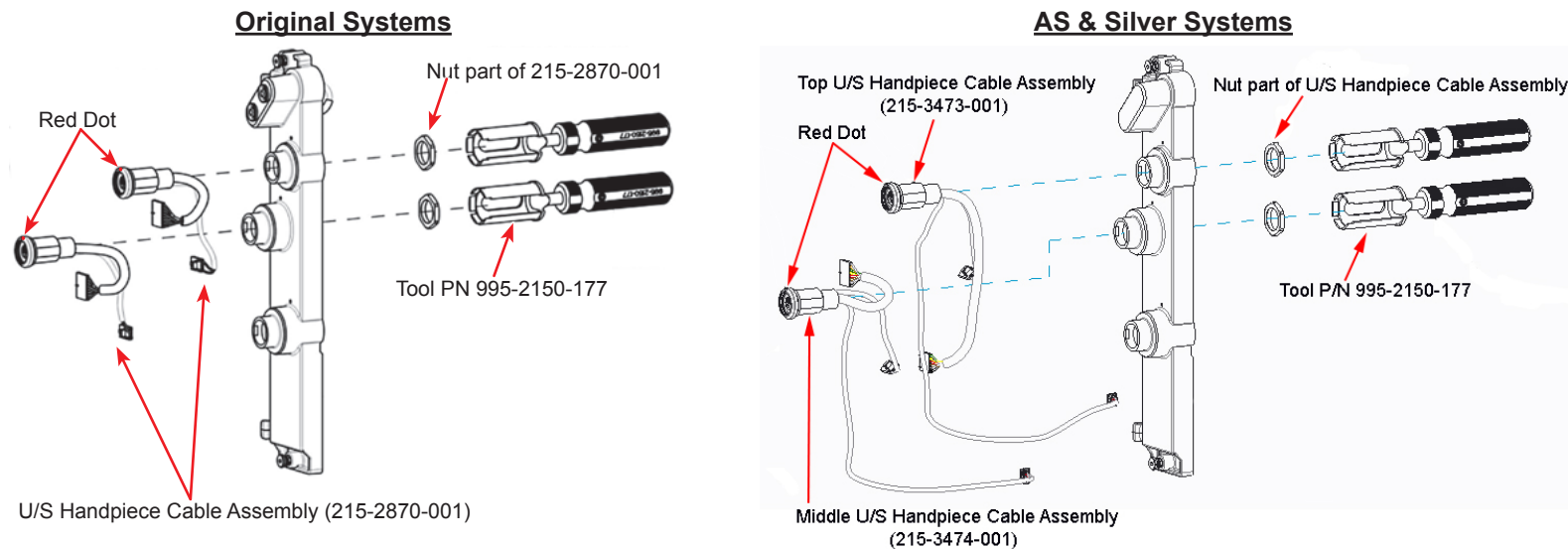


Figure 3-85 U/S Handpiece Cable Assembly Removal

64. Task Light Assembly (215-3446-501)

- 64.1 Remove Fluidics Controller Assembly per step [18](#).
- 64.2 Disconnect four connectors from the Fluidics Controller PCB: J10, J11, J14, and J15.
- 64.3 Remove two 2 mm hex screws and two washers securing Fluidics Controller PCB to the Connector Panel.
- 64.4 Remove two 3 mm hex screws securing Task Light Assembly to connector panel.
- 64.5 Remove Task Light Assembly.

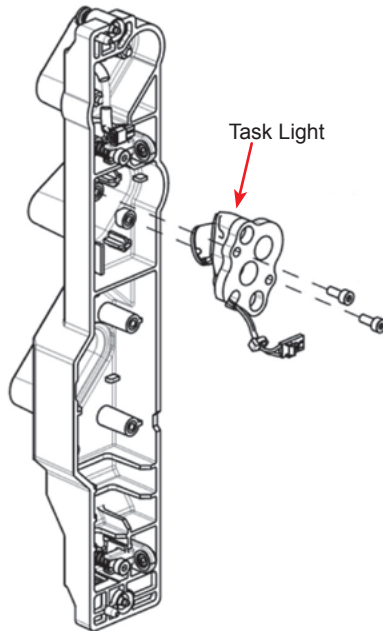


Figure 3-86 Task Light Removal

65. Console Footswitch Connectors

(W108, 215-1108-001 / W107, 215-1107-001)

- 65.1 Remove Front Foot Handle Panel per step [7](#).
- 65.2 Disconnect blue pneumatic tubing from Pneumatic Manifold (see [Figure 3-46](#)).
- 65.3 Loosen two 2.5 mm captive screws securing footswitch connector bracket to chassis (see [Figure 3-46](#)).
- 65.4 Loosen two 3 mm captive screws securing Noise Baffle cover to chassis (see [Figure 3-46](#)).
- 65.5 Carefully pull Noise Baffle cover from chassis while adjusting tubing and footswitch connector bracket for clearance. Take care not to damage foam insulation attached to underside of the Noise Baffle cover.
- 65.6 Remove footswitch connector:
- 65.7 For *Centurion** footswitch connector, remove nut from W108 Cable Assembly, 215-1108-001 using a $\frac{3}{4}$ inch nut wrench.
- 65.8 Disconnect J20 from MFIO PCB and remove W108 Cable Assembly.
- 65.9 For the other footswitch connector, remove nut from W107 Cable Assembly, 215-1107-001 using a $\frac{15}{16}$ inch nut wrench.
- 65.10 Disconnect J11 and J21 from MFIO PCB and remove W107 Cable Assembly.

REPLACEMENT: Ensure red dot of connector is at the top most position.

66. Removal of USB Touchscreen Interface Cable Assembly (W126-P1; 215-2386-001)

- 66.1 Remove the following items per Table 3-1:
 - Fluidics Module and Fluidics Controller Assembly
 - Remove Upper Left Panel
 - Remove Display Wrap Handle and Display Bucket
 - Remove Rear and Front Knuckle Covers
- 66.2 Cut all tie wraps securing cable W126.
- 66.3 Remove a 2.5 mm hex screw securing W126 cable clamp to Display Assembly.

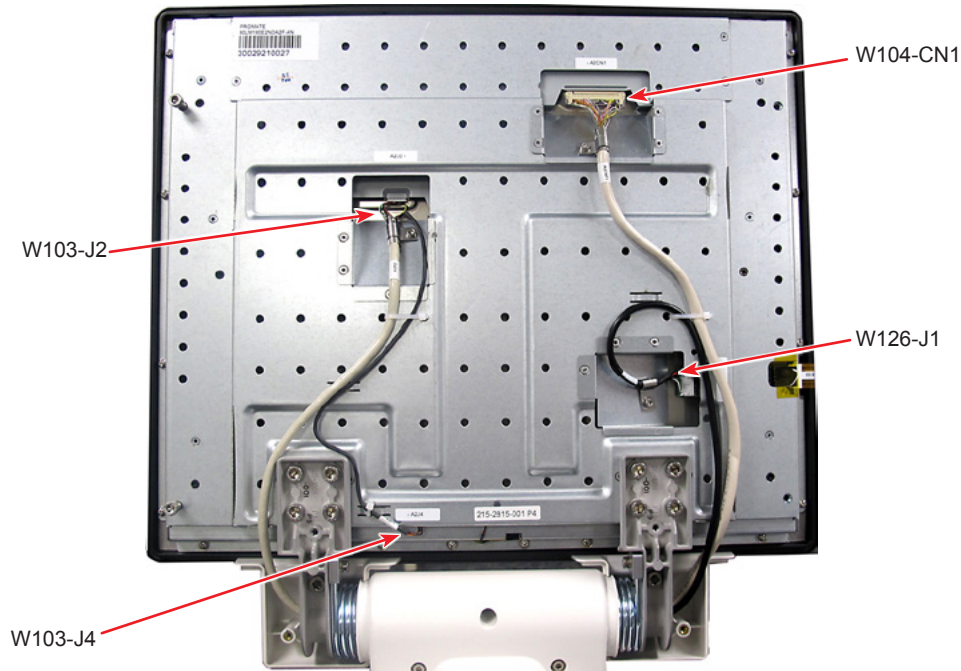


Figure 3-87 Display with Covers Removed

- 66.4 Carefully disconnect P1 from Display Assembly.
- 66.5 Position P1 connector sideways at the knuckle feed-through channel as shown in [Figure 3-88](#).



Figure 3-88 Cable Feed-Through Channel

- 66.6 Use a hex wrench to push connector P1 into the feed-through channel and pull cable W126 from the other end simultaneously as shown in [Figure 3-89](#). **Note: Do this slowly and carefully to avoid any damage to connector P1.**

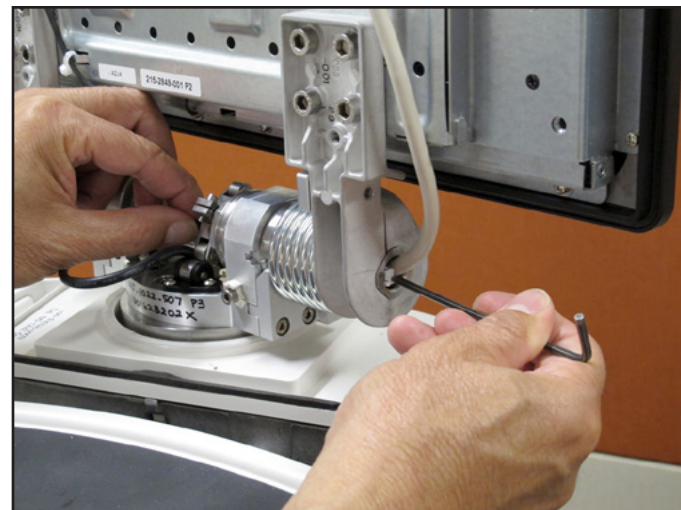


Figure 3-89 Removing Cable Assembly W126

- 66.7 Disconnect the other end of cable W126 from the Host Module at connector J1, and remove the W126 assembly.

Install replacement W126 Cable Assembly.

- 66.8 Attach (twist) a spare piece of wire at connector P1 and secure with a piece of electrical tape wrapped around the wire (see [Figure 3-90](#)).



Figure 3-90 Installing the Replacement W126 Cable Assembly

- 66.9 Feed the wire through the knuckle feed-through channel until it extends out the other side.
- 66.10 Position connector P1 sideways in the channel then start simultaneously pulling the wire and pushing the cable through.
- 66.11 Connect W126 cable connectors to the Display Assembly and Host Module.
- 66.12 Secure cable assembly with tie wraps as required.

67. Display Power Cable Assembly (W103, 215-1103-001)

- 67.1 Remove the following items per Table 3-1:
- Fluidics Module and Fluidics Controller Assembly
 - Remove Upper Left Panel
 - Remove Display Wrap Handle and Display Bucket
 - Remove Rear and Front Knuckle Covers
- 67.2 Cut all tie wraps securing cable W103.
- 67.3 Remove 2.5 mm hex screw securing W103 cable clamp to Display Assembly.
- 67.4 Carefully disconnect P2 and P4 from Display Assembly.
- 67.5 Position P2 connector sideways at the knuckle feed-through channel and pull W103 cable from the other end. **NOTE: Do this slowly and carefully to avoid any damage to connectors P2 and P4.**
- 67.6 Disconnect the other end of cable W103 from the Host Module at connector J3, and remove W103 cable assembly.
- 67.7 Install replacement W103 Cable Assembly.
- 67.8 Connect W103 cable connectors to the Display Assembly and Host Module.
- 67.9 Secure cable assembly with tie wraps as required.

68. Display Video Cable Assembly (W104, 215-1104-001)

- 68.1 Remove USB Touch Screen Interface Cable Assembly W126 per step [66](#).
- 68.2 Remove 2.5 mm hex screw securing W104 cable clamp to Display Assembly.
- 68.3 Carefully disconnect CNP1 by squeezing latch on each side to release (see [Figure 3-87](#)).
- 68.4 Position CNP1 connector sideways at feed-through channel and pull cable W104 from the other end. **Notes: Do this slowly and carefully to avoid damage on connector.**
- 68.5 Disconnect the other end of W104 cable from the Host Module at connector J2, and remove W104 Cable Assembly.
- 68.6 Install replacement W104 Cable Assembly.
- 68.7 Install USB Touch Screen Interface Cable Assembly.
- 68.8 Connect W104 cable connectors to the Display Assembly and Host Module.
- 68.9 Secure cable assembly with tie wraps as required.

69. Display Arm Base Mount Assembly (215-1877-507)

- 69.1 Remove Display Assembly per step [37](#).
- 69.2 Remove three 3 mm hex screws securing Knuckle Covers to Display Hinge and remove from console (see [Figure 3-91](#)).



Figure 3-91 Knuckle Covers Removal

- 69.3 Remove Work Surface (step [8](#)) and Display Insert Assembly (step [9](#)).
- 69.4 Remove three 5 mm hex screws securing Display Hinge onto Display Arm Base Mount Assembly (see [Figure 3-92](#)).

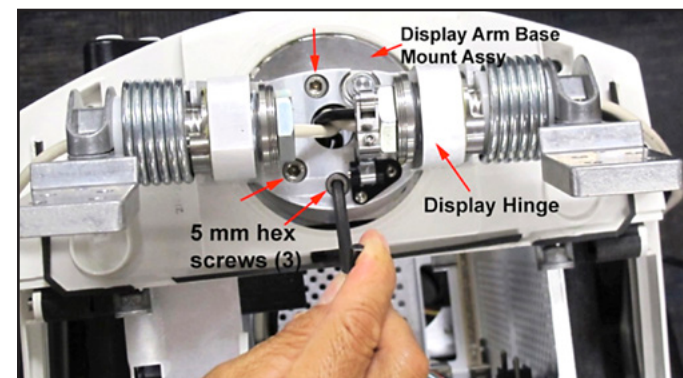


Figure 3-92 Display Hinge Removal

- 69.5 Carefully remove Display Cable Assemblies from Display Hinge and remove Display Hinge from console (refer to Display Cable Assemblies removal in steps [66](#), [67](#), and [68](#) for detail).
- 69.6 Remove Front Vent (step [3](#)), Upper Front (step [4](#)) and Lower Front (step [5](#)) Panels.
- 69.7 Remove Ultrasonics (U/S) PCB Assembly (step [19](#)), Fluidics Module and Fluidics Controller Assembly (step [18](#)).
- 69.8 Remove two 2.5 mm hex screws securing Top Panel Gasket Assembly and remove from console (see [Figure 3-93](#)).

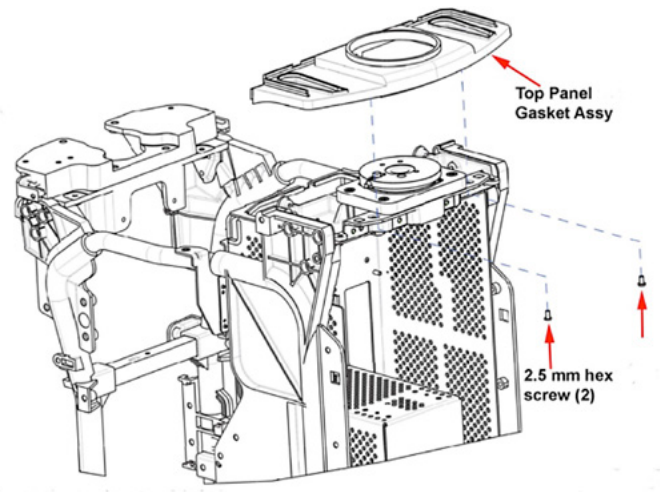


Figure 3-93 Top Panel Gasket Assembly

- 69.9 Remove four 5 mm screws securing Display Arm Base Mount Assembly (see [Figure 3-94](#)).
- 69.10 Carefully remove Display Cable Assemblies from Display Arm Base Mount Assembly and remove Display Arm Base Mount Assembly.

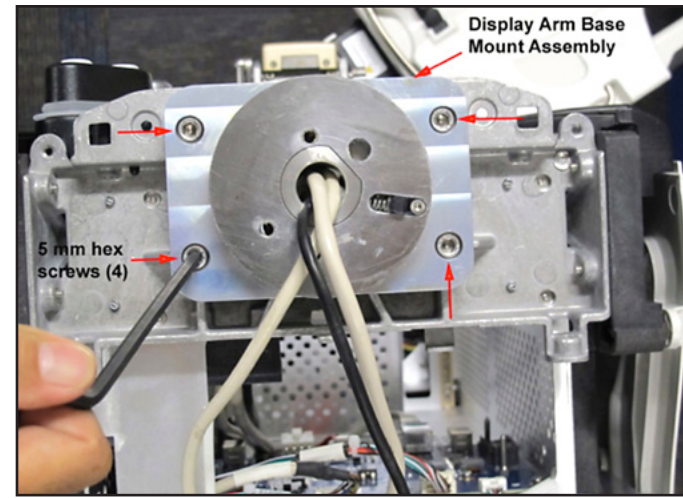
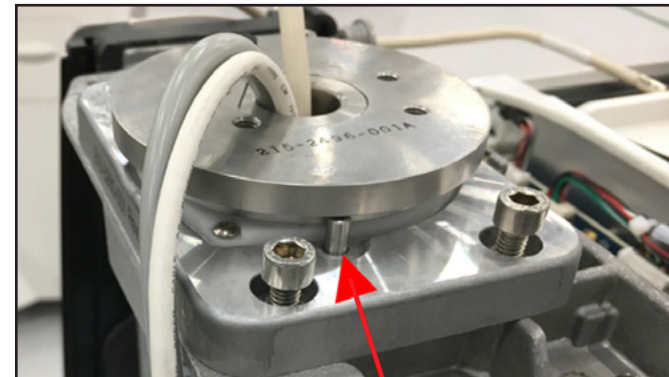


Figure 3-94 Display Arm Mount Assembly Removal

REPLACEMENT:

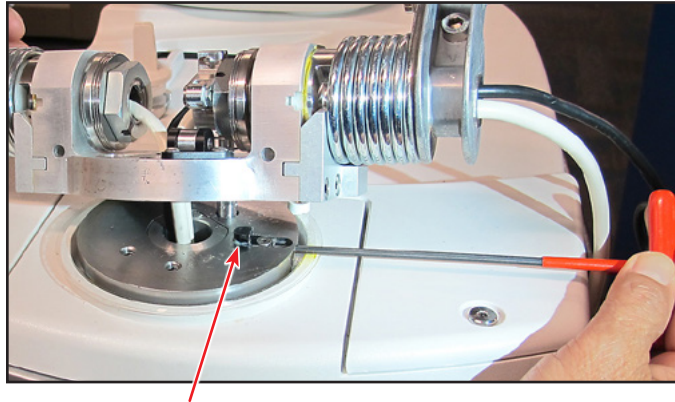
- 69.11 When installing Display Arm Base Mount Assembly, ensure pin is on the correct side as shown in [Figure 3-95](#).



Install Display Arm Mount
Assembly with pin on this side

Figure 3-95 Replacement of Display Arm Mount Assembly

- 69.12 When installing the Display Hinge, use a small Allen wrench to push the latch of Display Arm Mount Assembly until it stops ([Figure 3-96](#)), and place Display Hinge onto Display Arm Mount Assembly ([Figure 3-97](#)).



Latch of Display Arm
Mount Assembly

Figure 3-96 Push and Hold The Latch of Display Arm Mount Assembly

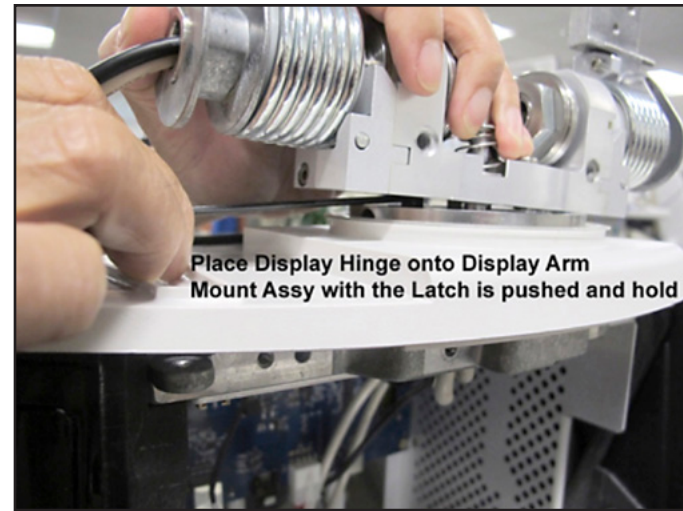


Figure 3-97 Place Display Hinge Onto Display Arm Mount Assy With Latch Is Pushed

- 69.13 Make certain Display Hinge is sitting flat on Display Arm Mount Assembly and secure Display Hinge to Display Arm Mount Assembly with three 5 mm hex screws.

70. IV Pole Dual Sensor Bracket (215-2591-001)

- 70.1 Remove Upper (per step [1](#)) and Lower Rear Panels (per step [2](#)).
- 70.2 Remove two 3 mm hex screws securing IV Pole Dual Sensor Bracket to IV Pole Base (see [Figure 3-98](#)) and remove from IV Pole Assembly.

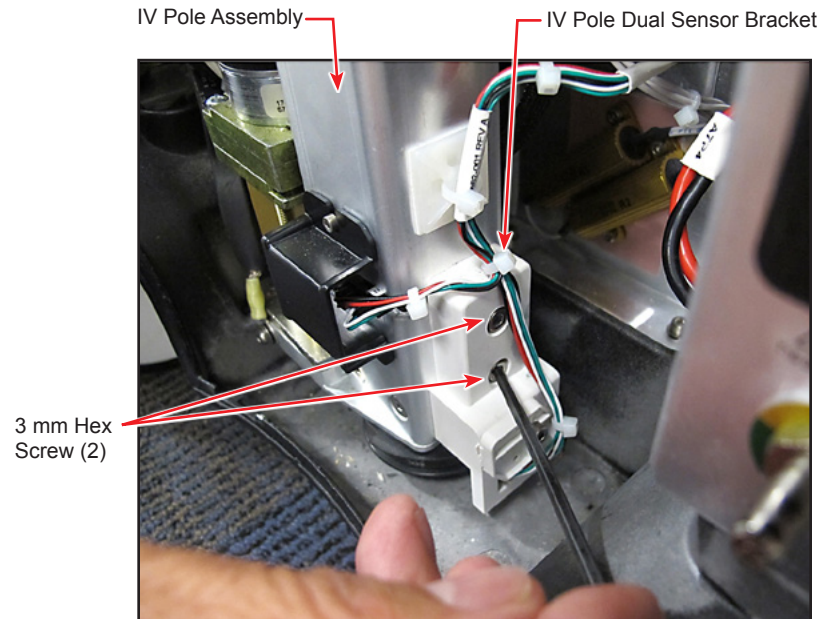


Figure 3-98 IV Pole Dual Sensor Bracket Removal

- 70.3 Wipe off any grease on the IV Pole Base location that could come in contact with the IV Pole Dual Sensor Bracket that will be installed later.

- 70.4 Remove one 3 mm hex screw securing Sensor Cover onto Dual Sensor Bracket (see [Figure 3-99](#)), and remove Sensor Cover from IV Pole Dual Sensor Bracket.

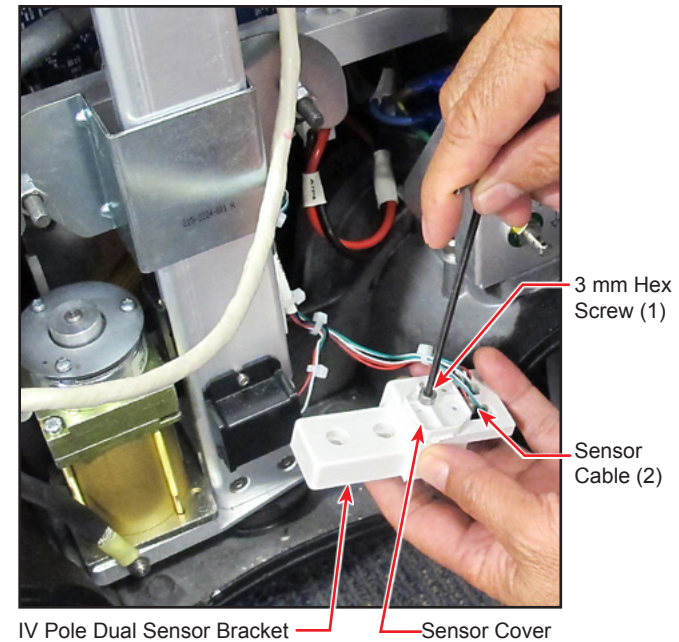


Figure 3-99 Sensor Cover Removal

- 70.5 Remove two sensor cables from the IV Pole Dual Sensor Bracket.

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SECTION FOUR - MAINTENANCE AND TROUBLESHOOTING

GENERAL INFORMATION

This section of the manual contains information to assist the Field Engineer in maintenance, troubleshooting, and repair of the *Centurion** Vision System. Refer to the list on the right for quick reference to the contents of this section.

CAUTION

The *Centurion** Vision System contains electrostatic discharge (ESD) sensitive devices. Always wear a wrist strap when working with this device.

SERVICE TEST PROCEDURE

Each time a field engineer works on a system it is required that system checkout is performed. The checkout is performed by following instructions written in the Service Test Procedure (STP), then returning its associated checklist to the local service support center for filing. The STP/Data Sheet is an independent document.

SPARE PARTS

Contact Technical Services for a list of spare parts to stock in preparation for supporting the service needs of the system.

CONTENTS - The following information is covered in this section:

Table 4-1 Service Tools and Test Supplies - page 4.2

1. USING SERVICE MODE - page 4.3

2. SOFTWARE INSTALLATION - page 4.8

3. BIOS RESET - page 4.17

4. BACKUP AND RESTORE SYSTEM SETTINGS AND DOCTOR MEMORIES THROUGH THE CONFIGURATION INSTALLER - page 4.18

5. BACKUP AND RESTORE OF DOCTOR SETTINGS THROUGH THE USER INTERFACE - page 4.19

6. FUSE REPLACEMENT - page 4.20

7. ACTIVE IRRIGATION TRAVEL CALIBRATION - page 4.20

8. WIRELESS VIDEOOVERLAY CONFIGURATION (for software versions 2.01 and 2.03) - page 4.21

9. WIRELESS VIDEOOVERLAY CONFIGURATION (for software version 2.04) - page 4.22

10. LANGUAGE PACK INSTALLATION - page 4.23

11. DISABLE OF NETWORK WI-FI (not footswitch wireless) - page 4.24

12. PNEUMATICS CALIBRATION - page 4.25

13. BAG PRESSURE SENSOR (BPS) CALIBRATION - page 4.28

14. CLEANING THE SYSTEM AIR FILTERS - page 4.28

15. CONSOLE AND WIRELESS FOOTSWITCH BATTERY STATE OF HEALTH (SOH) CHECK (REL_2.04 ONLY) - page 4.29

16. ADJUSTMENT OF DISPLAY ASSEMBLY ROTATION TENSION - page 4.29

17. WIRELESS EVENT LOG UPLOAD SETUP - page 4.30

Table 4-2 EVENT CODES - page 4.35

Table 4-1 Service Tools and Test Supplies

Description	PN or Cat. No.	Qty
Screwdriver set	N/A	1
Metric Hex Wrench set (1.5mm thru 6mm)	N/A	1 set
T-Handle Hex Wrenches (2mm, 2.5mm, 3mm, 4mm)	N/A	1
Nut driver 7mm, 8mm	N/A	1
Deep Socket 24mm (for casters)	N/A	1
27mm Open-End Wrench (for casters)	N/A	1
Hemostats	N/A	1
Counter Spanner Tool (large)	674-237	1
Counter Spanner Tool (small)	674-238	1
Calibrated Tools		
* Fluke 124 Scopemeter & 10:1 Probe	401-041	1
* Merian ZM400 Digital Pressure Meter (DPM)	401-045	1
* Transducer Test Fixture	202-1909-502	1
Special Tools		
Universal Load Box	210-3202-001	1
Centurion Ozil Test Cable	215-2987-001	1
IOL Test Cable	210-3209-001	1
Centurion Pneumatics Tubing Set for Vit Pump Test	316-3020-502	1
Power Supply Test Load (used for troubleshooting)	215-3174-551	1
Banana Plugs	063-040	2
AutoCap Test Cable	215-3195-001	1
USB 2.0 Flash Drive	215-3025-001	2
USB 3.0 Flash Drive	276-429	2
USB Keyboard	N/A	1
Syringe, 60 cc	--	1
14 gauge blunt needle for syringe	--	2
Infiniti Phaco Test Cable	210-3204-001	1
Wrench, US Hdpc Connector Tool	995-2150-177	1
Wrench, Coag & AutoCap Connector Spanner	995-2150-201 (large) and -202 (small)	1 ea.

Description	PN or Cat. No.	Qty
Test Supplies		
Active FMS Pack, 0.9 mm Tipless. (wet & dry)	8065752181	2+
Centurion Irrigation Bag	0007950185	2+
Nylon T-Fitting for tubing	893-597	2+
Nylon Y-Fitting for tubing	893-535	2+
3-Way Stopcock Fitting	893-505	2+
Female-to-Female Luer Fitting	893-432	2+
Tubings from cassettes irrigation line	--	1+
Fitting, Luer, Male to Female Plug	893-757	2
Fitting, Luer, Male - Male	893-344	2

1. USING SERVICE MODE

The Screens shown in [Figure 4-1](#), [Figure 4-2](#), and [Figure 4-3](#) show the available functions that may be used when servicing the system.

1.1 To enter Service Mode in software versions 2.01, 2.03, and 2.04:

1.1.1 From the Setup Status Menu, press the Custom button located on the right side of the screen.



1.1.2 Select "About" from the Custom list.

1.1.3 When the About screen is displayed, alternately tap once on each side of the word "About" in the title bar of the screen. The Service screen will be displayed as shown in [Figure 4-1](#) or [Figure 4-2](#). The Event Log tab is the default view.

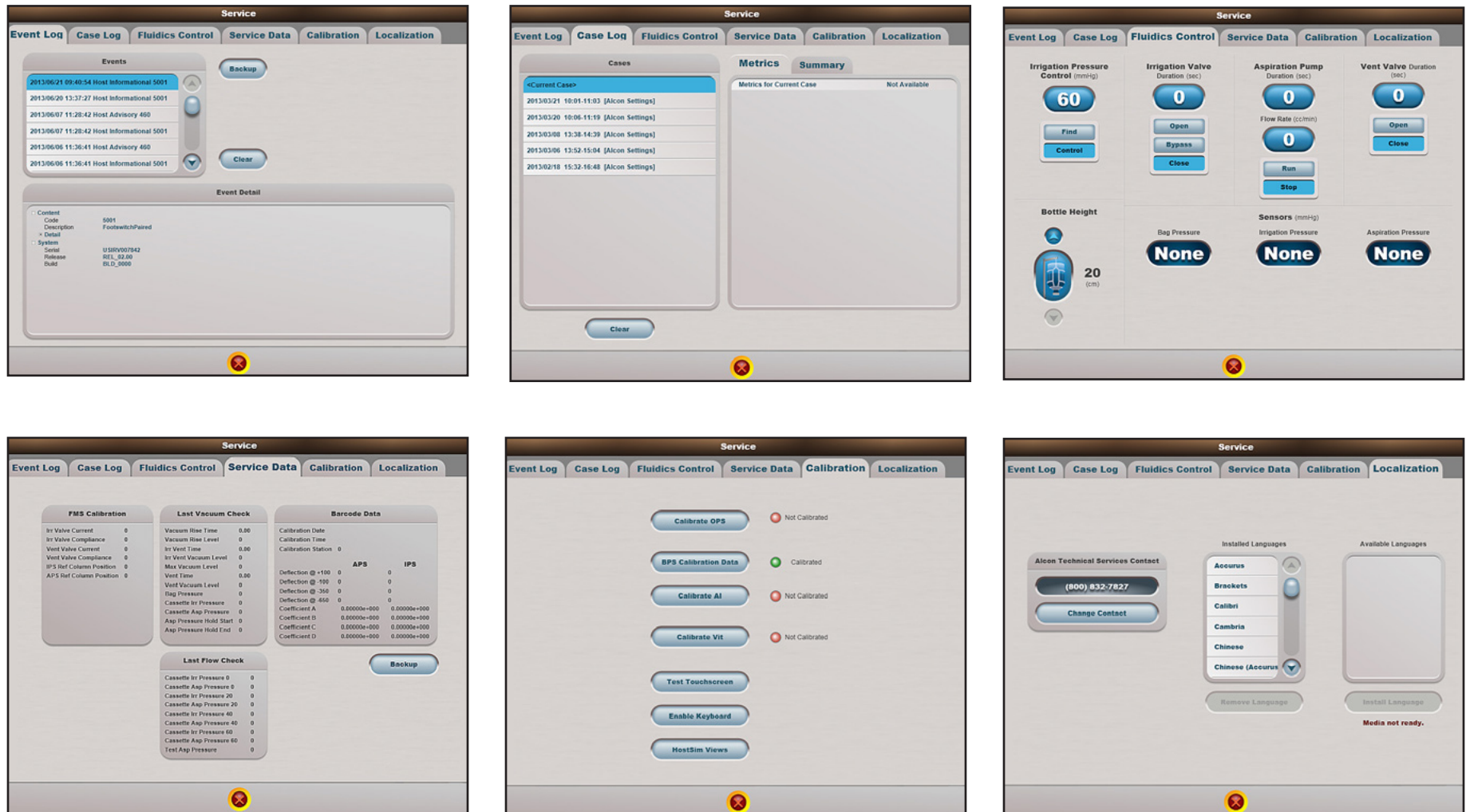


Figure 4-1 Service Mode Screens for Software Versions 2.01 and 2.03

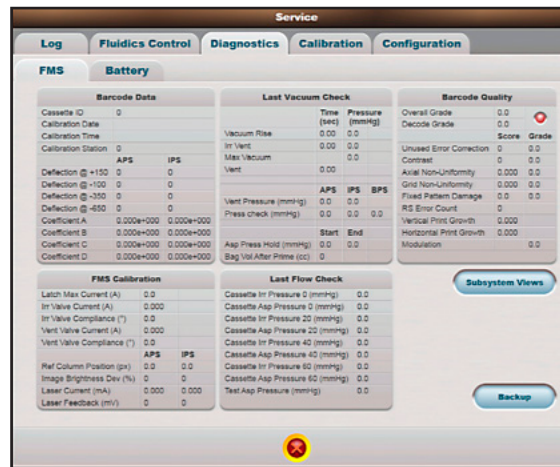
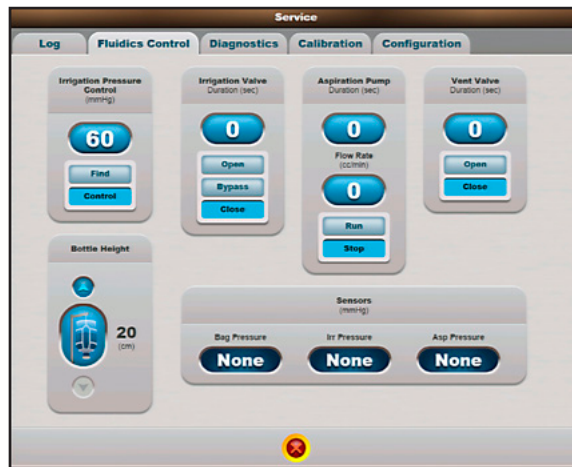
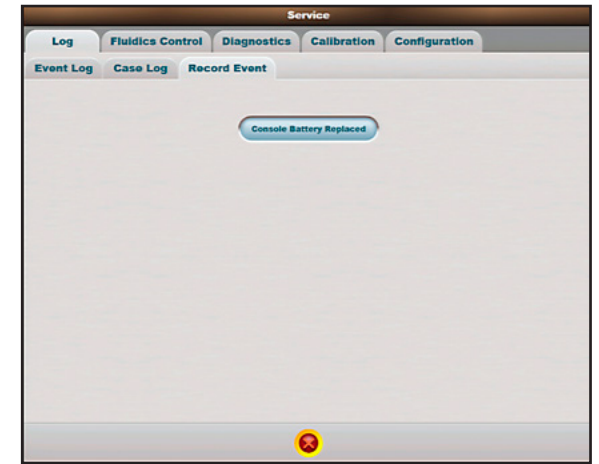
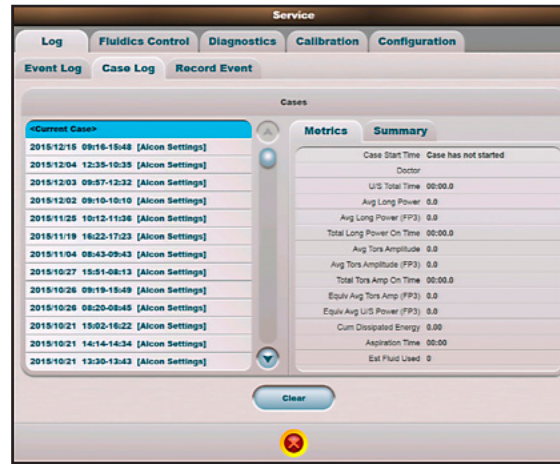


Figure 4-2 Service Mode Screens for Software Version 2.04



Figure 4-2...continued Service Mode Screens for Software Version 2.04

- 1.2 To enter Service Mode in software versions 3.00 and above:
 - 1.2.1 From the Setup Status Menu, press the Custom button located on the right side of the screen.
 - 1.2.2 Select "About" from the Custom list.



- 1.2.3 When the About screen is displayed, alternately tap on the left and then the right side of the *About* header.
- 1.2.4 Tap Alcon Technical Services.
- 1.2.5 Enter “6412” in the dialog and select green check mark. The Service screen will be displayed as shown in [Figure 4-3](#).

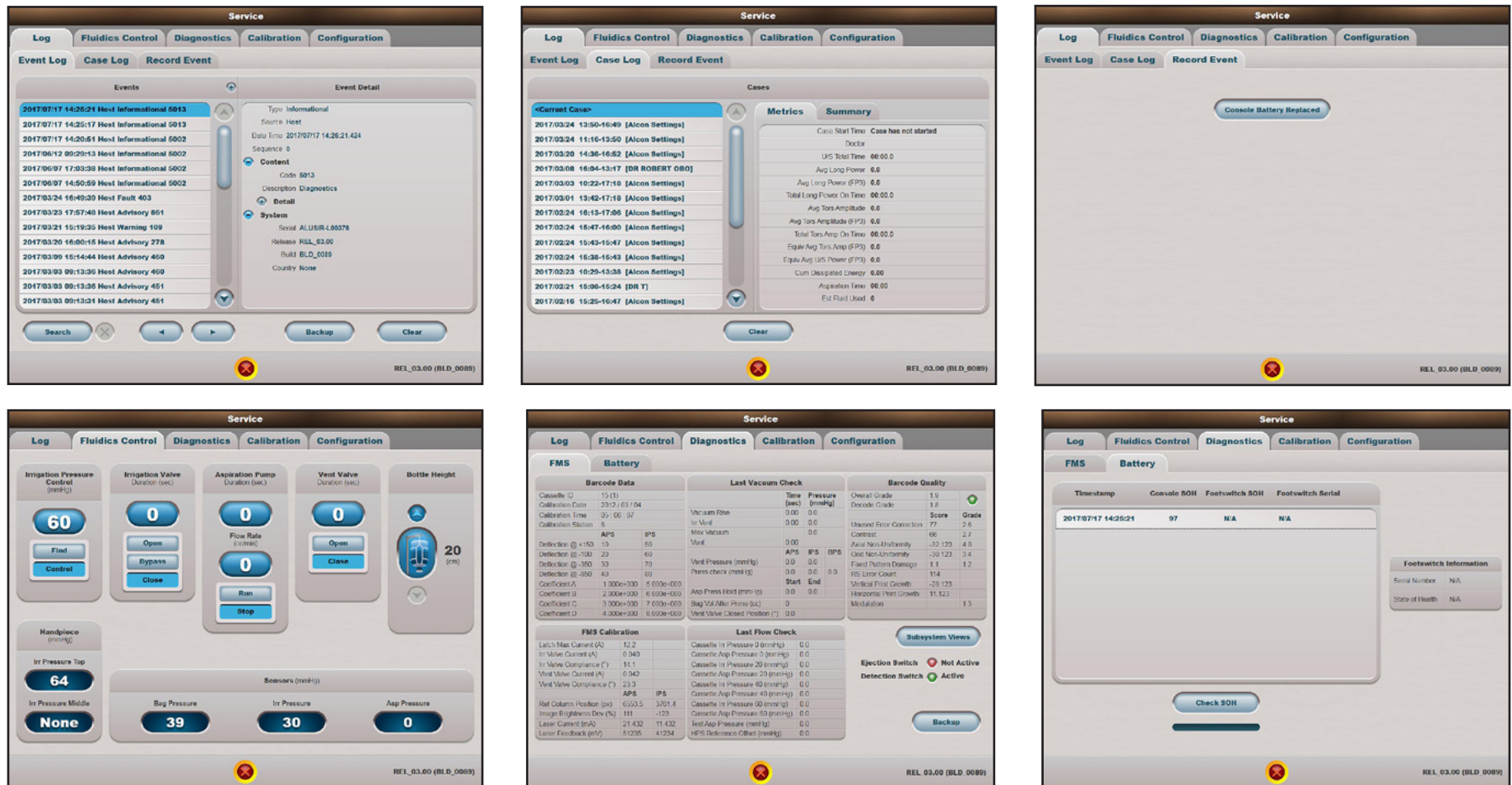


Figure 4-3 Service Mode Screens for Software Version 3.00

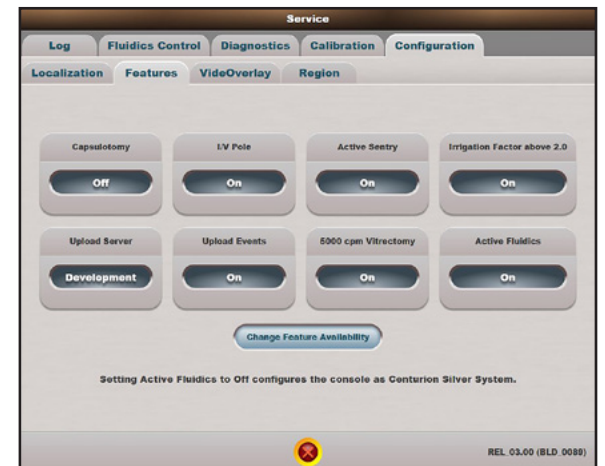


Figure 4-3...continued Service Mode Screens for Software Version 3.00

2. SOFTWARE INSTALLATION

2.1 HOST PROGRAMMING & TOUCHSCREEN CALIBRATION:

2.1.1 With the console turned off, insert the Console Service Media USB stick (containing software specified in the applicable Service Flash) in either Service Panel USB port (these ports are under the side drawer, not on the back of the console).

2.1.2 Power up the console.

The console Host Module will boot the Windows PE operating system from Service Media and display the Windows PE logo for about 30 seconds. Windows PE will display a console window for about 60 seconds in which boot status is displayed. When finished, the message “Starting the Installer” should be briefly displayed in green. Otherwise, a message indicating failure will be displayed in red, indicating that the Service Media was probably not prepared correctly.

NOTE: If the system failed to boot from the USB service media, or it booted up in the sub-system installer screen instead, remove the USB service media and perform the BIOS RESET procedure at step 3.

2.1.3 Wait for the installation media verification (upper right corner) to complete.

2.1.4 If the System Settings and Doctor Memories have not been backed up, perform procedure 4, steps 4.1.3 through 4.1.8, then return to next step to continue with the touchscreen calibration.

2.1.5 Ensure Calibrate tab is highlighted in upper left corner. (see [Figure 4-4](#)).

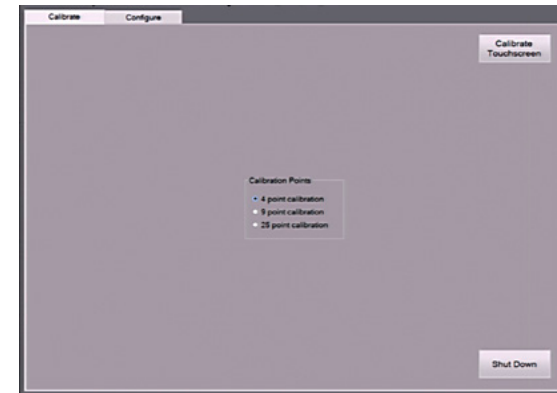


Figure 4-4 The Configuration Installer Screen - Calibrate Tab

2.1.6 If the touchscreen requires calibration, select 4 point calibration and press on Calibrate Touchscreen in upper right corner and follow the prompts to complete 4 point calibration. Continue to the next step if touchscreen is OK.

2.1.7 Select the Configure Tab in upper left corner (see [Figure 4-5](#)).

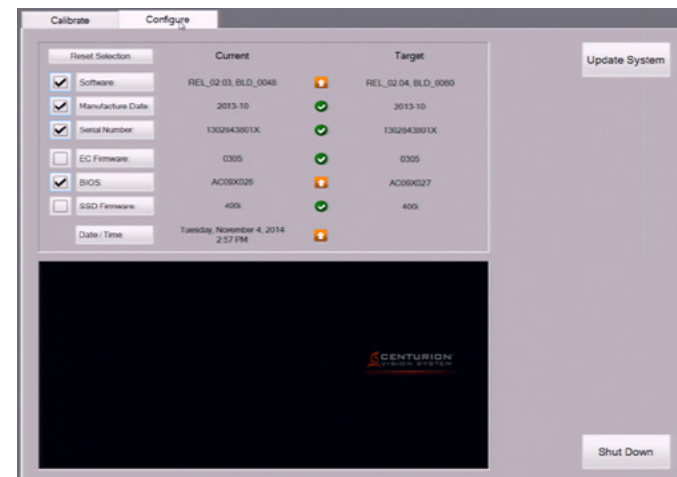


Figure 4-5 The Configuration Installer Screen - Configure Tab

- 2.1.8 Verify the manufacture date of the console shown in the Configure screen matches the manufacture date on the label on the back of the console. If it is not correct, set it by selecting “manufacture date” and entering the date from the label. The format is YYYY-MM.
- 2.1.9 Verify the serial number of the console shown in the Configure screen matches the serial number on the label on the back of the console. If it is not correct, set it by selecting “serial number” and entering the serial number from the label. The serial number is 11 or 12 digits with a capital “X”.
- 2.1.10 Verify the current date is correct. If not, set it by selecting the Date/Time button (in the left column).
- 2.1.11 Select Update System, then Select OK.
- 2.1.12 After completion, the message “Sequence completed successfully!” will be displayed. Select OK.
- 2.1.13 Select Shut Down, then select OK.
- 2.1.14 Wait for a blank screen.
- 2.1.15 Power down the console at the console Standby switch. You may have to hold it for 5 seconds to power down.
- 2.1.16 Remove the USB stick from the service port and plug it into one of the rear I/O USB Ports.
- 2.1.17 Install Footswitch cable to the Wireless Footswitch then connect it to the console.
- 2.1.18 Power up the console at the Standby switch.
- 2.1.19 Windows will automatically reboot twice while configuring the console, then the Subsystem Installer will automatically launch.

2.2 SUBSYSTEM SOFTWARE PROGRAMMING (for software version 2.03)

2.2.1 Wait for the Subsystem Installer to launch.

Install All Subsystem Software

2.2.2 Select the Subsystems tab in the Subsystem Installer.

2.2.3 Select Install Updates.

2.2.4 Select Yes in the confirmation dialog.

2.2.5 Wait for installation to complete, which takes approximately 15-20 minutes. The progress bar will be green throughout the entire installation. The progress bar may wrap around during the installation process.

2.2.6 After completion, the message “*Program Sequence Completed Successfully. Subsystem software is up to date*” is displayed. Select OK at the Sequence Complete dialog, then proceed to step [2.2.12](#). Otherwise, proceed to next step.

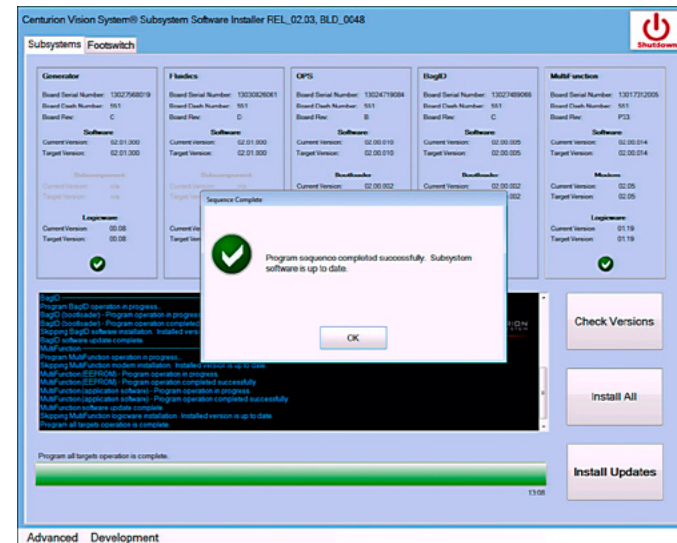


Figure 4-6 Subsystem Software Installer Tab (2.03)

- 2.2.7 The Sequence Complete dialog indicates that the console must be shut down and rebooted into the installer application to continue the update sequence. Select Shutdown button in the dialog.
- 2.2.8 Power down the console by pressing the green Standby switch for at least 5 seconds.
- 2.2.9 Immediately press and hold the Standby Switch for at least 10 seconds (the console will begin to power up, then power down, then power up again. The Standby Switch will change colors multiple times). The console will power up and boot into the Subsystem Installer.
- 2.2.10 Follow the on-screen instructions to complete the installation sequence.
- 2.2.11 A dialog is shown stating that subsystem software is up to date. Close the dialog.

Footswitch Software Installation

- 2.2.12 Download Footswitch software from intranet and copy to USB media. If 2.04 USB service media is available, the Footswitch software can be installed directly from this device.
- 2.2.13 With the console turned off, plug the 2.03 or 2.04 Console Service Media USB into one of the rear I/O USB Ports.
- 2.2.14 Install Footswitch cable to the Wireless Footswitch and connect it to the console if necessary.
- 2.2.15 Power up the console.
- 2.2.16 If using 2.03 Console Service Media USB, plug the USB media containing Footswitch software into the other rear I/O USB Port.
- 2.2.17 From the Subsystem Software Installer screen, select Footswitch Tab in upper right corner (see [Figure 4-7](#)).

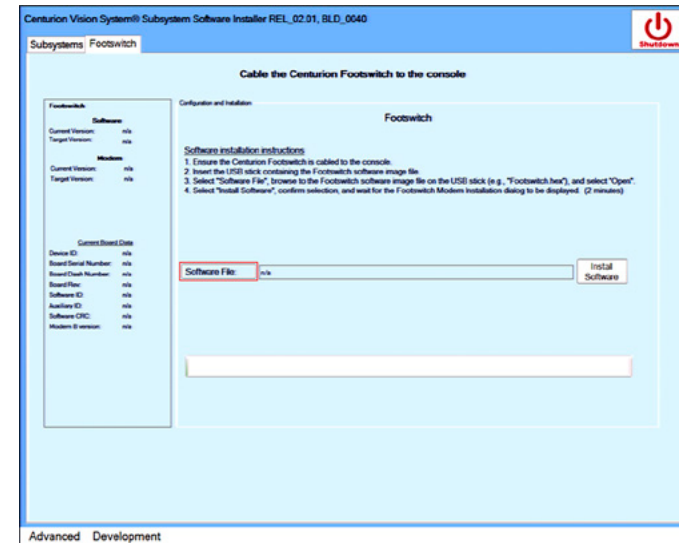


Figure 4-7 Subsystem Software Installer Screen - Footswitch Tab

- 2.2.18 Select Software File. This will bring up the Target executable file screen for next step.
- 2.2.19 Select Computer from Windows and navigate to the Devices with Removable Storage (Service Media USB) that contains the Footswitch software and select Open (see [Figure 4-8](#)).
- 2.2.20 Select Footswitch.hex and ensure it is highlighted. Select Open (see [Figure 4-8](#)).

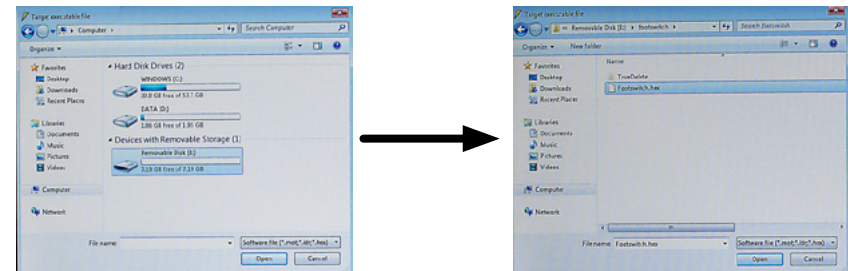


Figure 4-8 Selecting the Footswitch Software from the Service Media

- 2.2.21 - If using 2.03 Console Service Media USB: Ensure Footswitch.hex is displayed in Software File then click on Install Software (see [Figure 4-9](#)).
- If using 2.04 Console Service Media USB: Navigate to ConsoleApplications/Footswitch/Footswitch.hex.

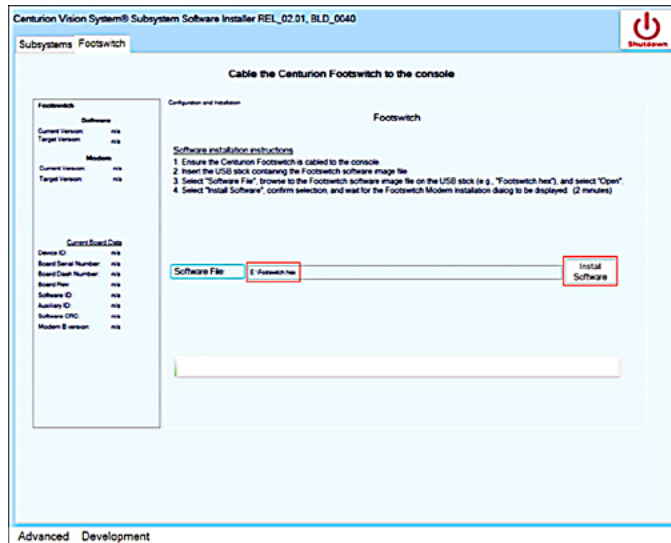


Figure 4-9 Footswitch.hex File Displayed in Software Installer

- 2.2.22 Select Yes in the confirmation dialog and follow the instruction in the Footswitch Modem Installation dialog shown in [Figure 4-10](#) which takes around 4 minutes.

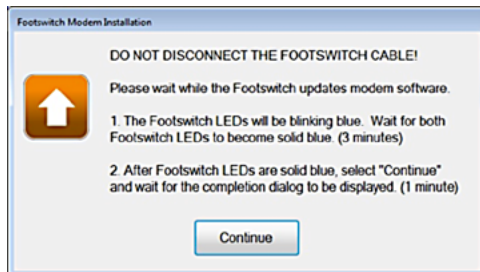


Figure 4-10 Footswitch Modem Installation Dialog

- 2.2.23 Select OK in the Installation Complete dialog.
- Shut down Subsystem Installer
- 2.2.24 Select Shutdown in upper right corner then select Exit in the Exit installation dialog.
- 2.2.25 If the Standby switch remains green, hold it for 5 seconds to power down.
- 2.2.26 Remove the USB media from the service port and power up the console.
- 2.2.27 Ensure that display shows the Centurion Animation Startup screen followed by Surgery Setup Screen.
- 2.2.28 If advisory 190 displayed, navigate to the Calibration tab and calibrate the BPS Calibration data by selecting Zero Calibrate BPS.
- 2.2.29 If any advisories, warnings, or fault messages are displayed, troubleshoot as necessary.
- 2.2.30 If necessary, restore system settings and doctor memories.

2.3 SUBSYSTEM SOFTWARE PROGRAMMING (for software version 2.04 BLD_77)

2.3.1 Wait for the Subsystem Installer to launch.

Install All Subsystem Software

2.3.2 Select the Subsystems tab in the Subsystem Installer.
NOTE: Do not press the "Check Versions" button.

2.3.3 Select Install Updates.

2.3.4 Select Yes in the confirmation dialog.

2.3.5 Wait for installation to complete, which takes approximately 15-20 minutes.
NOTE: The console may shutdown after this installation step is complete. If it does, then a console reboot is required to continue with the installation process. After reboot, go to step 2.3.6.
The progress bar will be green throughout the entire installation. The progress bar may wrap around during the installation process.

After completion, the message “*Sequence completed successfully. All subsystems contain the latest updates*” is displayed.

NOTE: The console may shutdown after this installation step is complete. If it does, then a console reboot is required to continue with the installation process. After reboot, go to step 2.3.6.
Select OK at the Sequence Complete dialog (see [Figure 4-11](#)).

Install Footswitch Software

2.3.6 Install Footswitch cable to the Wireless Footswitch then connect it to the console if necessary.

2.3.7 Select Footswitch tab in the Subsystem Installer then select “Install Software” button (see [Figure 4-12](#)).

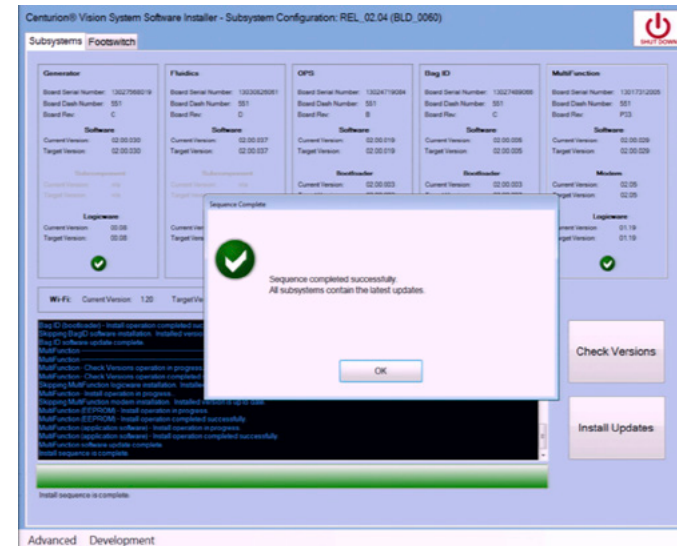


Figure 4-11 Subsystem Software Installer Tab (2.04)

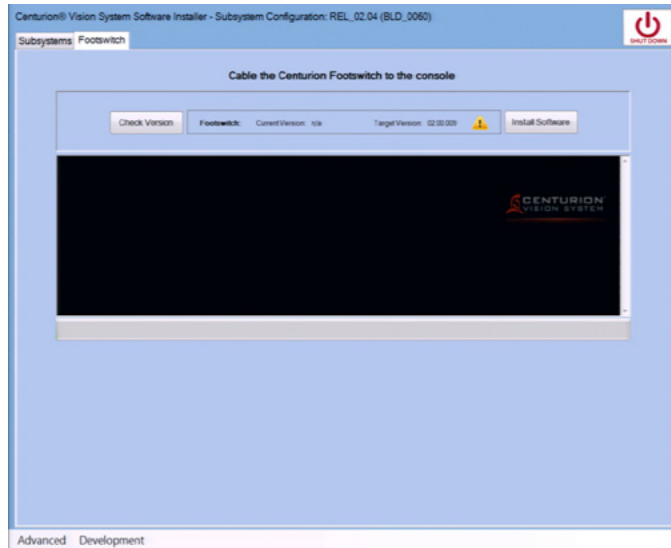


Figure 4-12 Footswitch Software Installer Tab

- 2.3.8 Select “Yes” at the confirmation dialog.
 - 2.3.9 Wait for installing Footswitch software to complete. After completion, the message “Sequence Completed Successfully.”
NOTE: The console may shutdown after this installation step is complete. If it does, then a console reboot is required to continue with the installation process. After reboot, go to step 2.3.14. Footswitch contains the latest software update” is displayed.
 - 2.3.10 Select OK.
- Shut down Subsystem Installer
- 2.3.11 Exit the installer using the Shutdown button in upper right corner of the screen. Select Shut down in the Shut down dialog. Wait for screen to turn black.
 - 2.3.12 Power down the console by pressing the green Standby switch for at least 5 seconds
 - 2.3.13 Software installation is complete. Continue to the next step.

Boot into Centurion* Setup Screen

- 2.3.14 Remove the Console Service Media USB stick and power up the console at the Standby switch.
- 2.3.15 Ensure that display shows the Centurion Animation Startup screen followed by Surgery Setup Screen.
- 2.3.16 If advisory 190 is displayed, navigate to the Calibration tab and calibrate the BPS Calibration data by selecting Zero Calibrate BPS.
- 2.3.17 If the Fluidics PCB was replaced and Advisory 551 is displayed (VIT calibration file not embedded on PCB), go to the Service screen/Calibration tab and then select "Calibrate Vit." Enter "53" in Duty Cycle field and then select Save.
- 2.3.18 Perform the "Pneumatics Calibration" procedure. When complete, continue to the next step.
- 2.3.19 If the Fluidics PCB was replaced and Advisory 157 is displayed (AI Travel Calibration file not embedded on PCB), go to the Service screen/Calibration tab and then select "Calibrate AI" and perform the Active Irrigation Travel Calibration procedure. When complete, recycle power to clear Advisory 157, then continue to the next step.
- 2.3.20 From Service screen – Configuration – Localization, enter Country of Install (see [Figure 4-13](#)).
- 2.3.21 If any advisories, warnings, or fault messages are displayed, troubleshoot as necessary.
- 2.3.22 If necessary, restore system settings and doctor memories.



Figure 4-13 Localization Tab - Country of Install

2.4 SUBSYSTEM SOFTWARE PROGRAMMING

(for software versions 3.0 and 3.01)

- 2.4.1 Select the appropriate *Centurion** system on the Select System display shown in [Figure 4-14](#)), and select OK (for software 3.01 only).

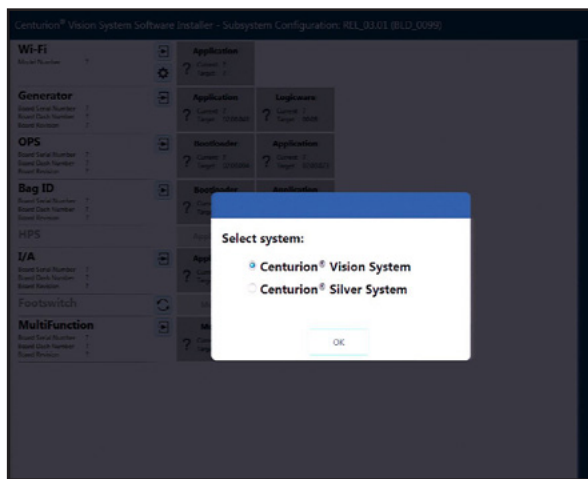


Figure 4-14 System Select Dialog

- 2.4.2 Wait for the Subsystem Installer to complete the automatic Refresh Versions sequence. The progress bar will be green throughout the process.

- 2.4.3 Select OK at the Refresh Versions Complete dialog.

Install All Subsystem Software

- 2.4.4 Select *Install Updates*.

- 2.4.5 Select *Yes* in the confirmation dialog.

- 2.4.6 Wait for installation to complete (approximately 15-20 minutes).

- 2.4.7 Select *OK* at the *Install Updates* completed dialog (shown in [Figure 4-15](#)).

NOTE: At this time, the Wireless Footswitch Software should have also been installed if the footswitch cable was installed prior to Subsystem Installer start. If not, proceed to the next step to install Footswitch Software.

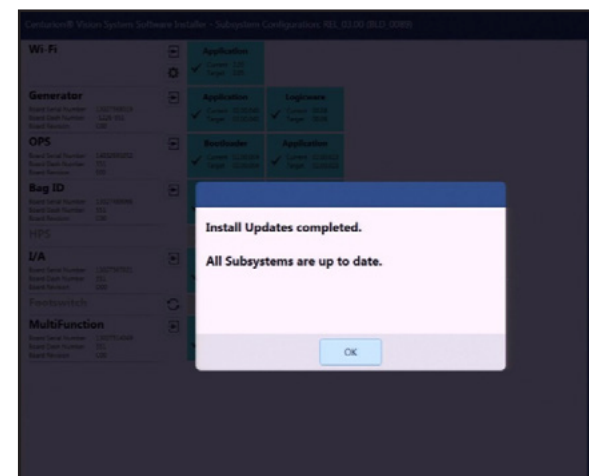


Figure 4-15 Install Updates Completed Dialog

Install Footswitch Software

NOTE: Footswitch software version 3.0 is the same as software version 2.04. If system already has Footswitch software version 2.04, then you do not need to install 3.0.

2.4.8 Install Footswitch cable to the Footswitch then connect it to the console.

2.4.9 Select the *Subsystem Refresh Versions Button* in the Footswitch field (shown in [Figure 4-16](#)).

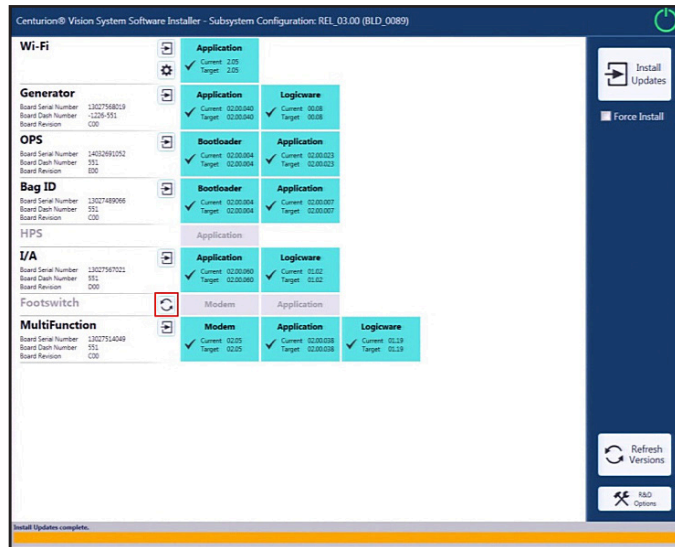


Figure 4-16 Refresh Versions Button on the Software Installer Screen

2.4.10 Select the *Subsystem Install Updates Button* (shown in [Figure 4-17](#)).

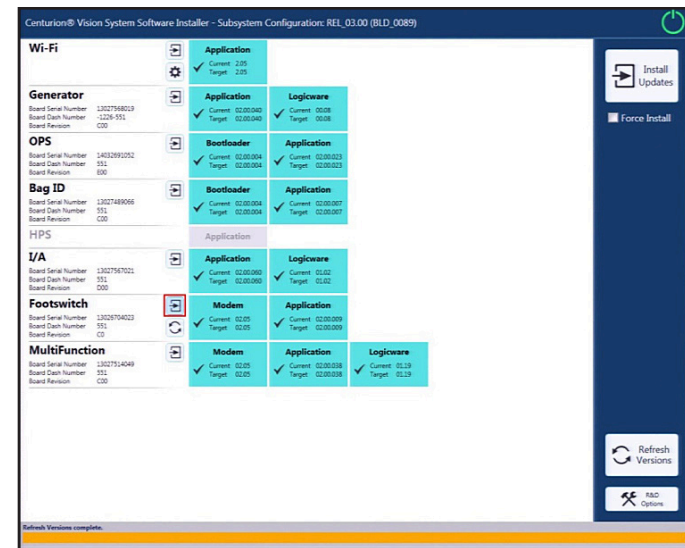


Figure 4-17 Subsystem Install Updates Button

2.4.11 Select *Yes* at the confirmation dialog.

2.4.12 Wait for footswitch software installation to complete. After completion, the message “*Install Updates complete*” is displayed.

2.4.13 Select *OK*.

Shut down the Subsystem Installer

2.4.14 Exit the installer using the green power icon in upper right corner of the screen. Select Shut down in the Shut down dialog. Wait for screen to turn black.

2.4.15 Power down the console by pressing the green Standby switch for at least 5 seconds.

2.4.16 Software installation is complete. Continue to the next step.

Boot into Centurion® Setup Screen

2.4.17 Remove the Console Service Media USB stick and power up the console at the Standby switch.

2.4.18 Ensure that display shows the *Centurion®* Animation Startup screen followed by Surgery Setup Screen.

- 2.4.19 If advisory 190 is displayed, navigate to the Calibration tab and calibrate the BPS Calibration data by selecting Zero Calibration BPS.
- 2.4.20 If the Fluidics PCB was replaced and Advisory 551 is displayed (VIT calibration file not embedded on PCB), go to the Service screen/Calibration tab and select “*Calibrate Vit.*” Enter “53” in Duty Cycle field and then select Save.
- 2.4.21 Perform the “Pneumatics Calibration” procedure. When complete, continue to the next step.
- 2.4.22 If the Fluidics PCB was replaced and Advisory 157 is displayed (AI Travel Calibration file not embedded on PCB), go to Service screen/Calibration tab and then select “*Calibration AI*” and perform the Active Irrigation Travel Calibration procedure. When complete, recycle power to clear Advisory 157, then continue to the next step.
- 2.4.23 System Configuration
 - 2.4.23.1 Navigate to Service mode, and then select the Configuration and Localization tabs.
 - 2.4.23.2 Set the Country of Install (see [Figure 4-18](#)).
 - 2.4.23.3 Verify the correct Alcon Technical Services Contact phone number. Update if necessary.
 - 2.4.23.4 Select the Features tab.
 - 2.4.23.5 Select the Change Feature Available and set “Irrigation Factor above 2.0” to Off.
 - 2.4.23.6 If the system has the serial number 1502619801X or higher, or is one of the following three consoles: 1502483101X, 1502483901X, 1502484201X, then set “5000 cpm Vitrectomy” to On.

- 2.4.23.7 Select the Region tab.
- 2.4.23.8 Set the “Footswitch Network Region” to Japan.
- 2.4.23.9 Set the “Video Overlay Wi-Fi Network Region” to the appropriate region for your country. If not sure, check with your regulatory compliance manager.
- 2.4.23.10 Set the “Uploaded Network Region” to the appropriate region for your country. If not sure, check with your regulatory compliance manager.



Figure 4-18 Service - Configuration - Localization Screen

- 2.4.24 If any advisories, warnings, or fault messages are displayed, troubleshoot as necessary.
- 2.4.25 If necessary, restore system settings and doctor memories.

3. BIOS RESET

Perform this procedure if the system failed to boot from the USB service media during software installation.

- 3.1 If necessary, remove USB service media from Service Panel USB port.
- 3.2 Attach a keyboard to a Rear-Panel I/O USB slot.
- 3.3 Apply console power. Repeatedly press and release the DEL button until prompted to enter a BIOS password.
- 3.4 Enter BIOS password:
 - 3.4.1 For 2.01 and 2.03 software versions: Enter the BIOS password/access code as CON\$0LE (all CAPs; 0 = numeral 0, not a letter O).
 - 3.4.2 For 2.04 and 3.0X software versions: Enter the BIOS password/access code as CON\$0LE#2 (all CAPs; 0 = numeral 0, not a letter O).
- 3.5 In the BIOS Setup utility, use the arrow keys to navigate to "Save & Exit," select "Restore Defaults" and press Enter (see [Figure 4-19](#)).

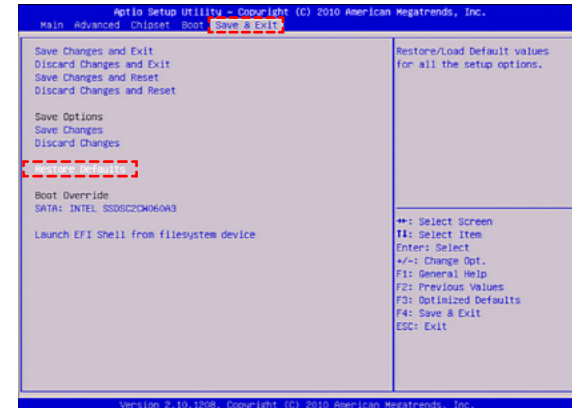


Figure 4-19 BIOS Screen

- 3.6 When prompted to Load Optimized Defaults, select Yes.
- 3.7 Select "Save Changes and Exit" and press Enter.
- 3.8 When prompted to Save & Exit Setup, select Yes.
- 3.9 Return to the Software Installation Procedure at step [2](#).

4. BACKUP AND RESTORE SYSTEM SETTINGS AND DOCTOR MEMORIES THROUGH THE CONFIGURATION INSTALLER

4.1 Backup System Settings and Doctor Memories

- 4.1.1 With the console turned off, insert the Console Service Media USB stick containing software specified in top level BOM, in either Service Panel USB port (these ports are under the side drawer, not on the back of the console).
- 4.1.2 Power up the console. The system will perform the installation media verification, then boot to the Centurion Configuration Installer-Touchscreen Calibration Tab.
- 4.1.3 Select the Configure Tab and click on Software (see [Figure 4-5](#)).
- 4.1.4 Plug a USB media into one of the rear I/O USB ports.
- 4.1.5 In the DATA Partition Backup section (see [Figure 4-20](#)), click Backup.

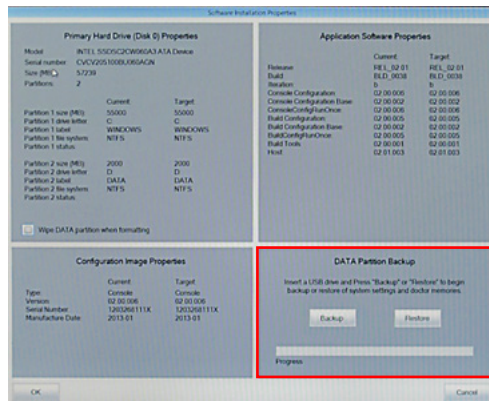


Figure 4-20 DATA Partition Backup and Restore Buttons

- 4.1.6 When "Backup Succeeded" message appears, select OK and remove the USB from the rear I/O USB Port.
- 4.1.7 Select OK from the bottom left corner. The system will return to the Configure Tab.

- 4.1.8 If performing a software installation, return to the Software Installation procedure. Other options from this screen include touchscreen calibration or shutting down the system.

4.2 Restore System Settings and Doctor Memories

- 4.2.1 If necessary, perform steps [4.1.1](#) through [4.1.3](#).
- 4.2.2 Plug the USB media containing the data into one of the rear I/O USB ports.
- 4.2.3 In the DATA Partition Backup section (see [Figure 4-20](#)), click Restore.
- 4.2.4 Select the appropriate data file and click OK (see [Figure 4-21](#)).

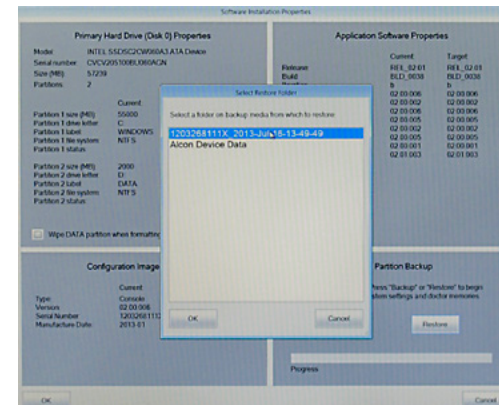


Figure 4-21 Selecting the Restore File

- 4.2.5 Select OK and remove the USB from the rear I/O USB Port.
- 4.2.6 Select OK from the bottom left corner. The system will return to the Configure Tab.
- 4.2.7 Select Shutdown to turn off system.

5. BACKUP AND RESTORE OF DOCTOR SETTINGS THROUGH THE USER INTERFACE

5.1 Backup of Doctor Settings

- 5.1.1 Plug a USB media into one of the rear I/O USB ports.
- 5.1.2 Select Backup/Restore from the Custom Menu. The Backup tab is the default as shown in [Figure 4-22](#).
- 5.1.3 To backup an individual doctor: select *Doctor*, then press *Backup Doctor*.
- 5.1.4 To backup all Doctors: press *Backup All Doctors*.

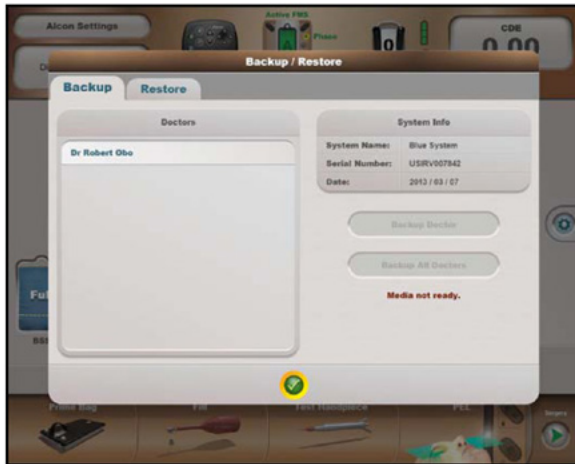


Figure 4-22 Backup/Restore Dialog Screen - Backup Tab

5.2 Restoring the Doctor Settings

- 5.2.1 Plug the USB media containing the Doctors Settings into one of the rear I/O USB ports.
- 5.2.2 Select Backup/Restore from the Custom Menu. The Backup tab is the default as shown in [Figure 4-22](#).
- 5.2.3 Press the Restore Tab (see [Figure 4-23](#)).

5.2.4 To Restore an individual doctor:

- 5.2.4.1 Press Doctors in the Sort By section.
- 5.2.4.2 Press the Plus sign (+) next to the doctor's name.
- 5.2.4.3 Select the date of the files to restore.
- 5.2.4.4 Press the Restore Doctor button.
- 5.2.4.5 Resolve any conflict by selecting Overwrite, Skip, or Save As.

5.2.5 To restore all Doctors:

- 5.2.5.1 Press Date in the Sort By section.
- 5.2.5.2 Select the date to restore.
- 5.2.5.3 Press the Restore All Doctors button.
- 5.2.5.4 Resolve any conflict by selecting Overwrite, Overwrite All, Skip, Skip All or Save As.

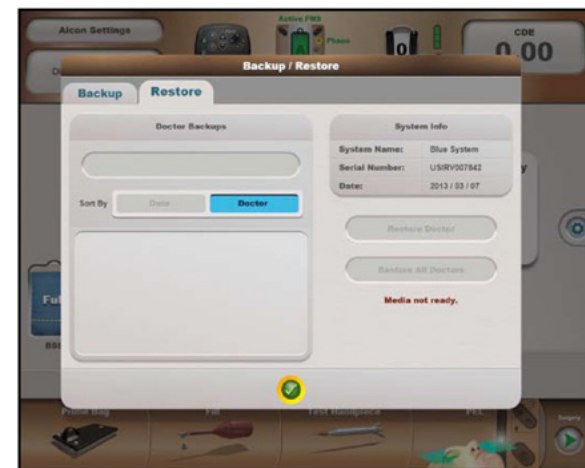


Figure 4-23 Backup/Restore Dialog Screen - Restore Tab

6. FUSE REPLACEMENT

- 6.1 Turn the primary AC power switch OFF. It is located at the bottom of the rear panel on the power module. Unplug power cord from power module.
- 6.2 Insert a flat surfaced instrument along the left side of the power module fuse door. Pressing the flat instrument to the right against the fuse door, pull out to release door.

CAUTION

The fuse door must be pressed gently to ensure it does not break.

- 6.3 With fuse door open, grasp the fuse holder and pull it out from the power module.
- 6.4 Gently remove and replace fuses. Contact Alcon Technical Services for the correct rating and size.
- 6.5 Reinsert fuse holder into power module and shut the fuse door.
- 6.6 Plug power cord into power source.

7. ACTIVE IRRIGATION TRAVEL CALIBRATION

- 7.1 Go to the Service Screens.
 - 7.1.1 From the surgical setup screen, press the Menu icon, then About.
 - 7.1.2 To access the hidden Service menu, press to the right and then to the left of the word “About” at the top of the window.
- 7.2 Next press Calibration tab, and press “Calibrate AI” button (see [Figure 4-24](#)).



Figure 4-24 Service Calibration Screens for Calibrating Active Irrigation

- 7.3 Obtain a bag with of 50 ml of liquid and no entrapped air. This bag simulates an empty bag. If this bag is not available, follow the steps below to prepare one:
 - 7.3.1 Completely empty a bag using pump or syringe.
 - 7.3.2 Inject 50 ml of water into the bag using a syringe.
 - 7.3.3 Remove any entrapped air from the bag.
- 7.4 Install 50 ml bag into console AI. If desired, spike the bag and use an empty syringe to prevent fluid from squirting out of the bag.
- 7.5 Close AI sliding door and press calibrate on the console screen to start automatic calibration.
- 7.6 Encoder count will be displayed and will increment as the plunger travels.
- 7.7 Press the check mark to accept.
- 7.8 Confirm the calibration passes (green indicator on GUI).
- 7.9 Open AI sliding door and remove bag.
- 7.10 Press “X” to exit back to setup screen.

8. WIRELESS VIDEOOVERLAY CONFIGURATION

(for software versions 2.01 and 2.03)

NOTE: There are two HD VideoOverlays available for the system: **8065751495** referred to as the "old HD VideoOverlay" and **8065752976** referred to as the "new HD VideoOverlay."

- 8.1 Install Wi-Fi Device Configuration Utility (WDCU) on laptop:
 - 8.1.1 On the *Centurion** Service Media USB Drive with directory labeled VideoOverlayConfigurationUtility, locate file WDCU.exe located in subdirectory WiFiDeviceConfigurationUtility.
 - 8.1.2 Copy file WDCU.exe onto laptop.
- 8.2 Configure VideoOverlay (VO) with WDCU:
 - 8.2.1 On the HD VideoOverlay Rear Panel, set DIP Switch 1 to the "ON" position (see [Figure 4-25](#)).

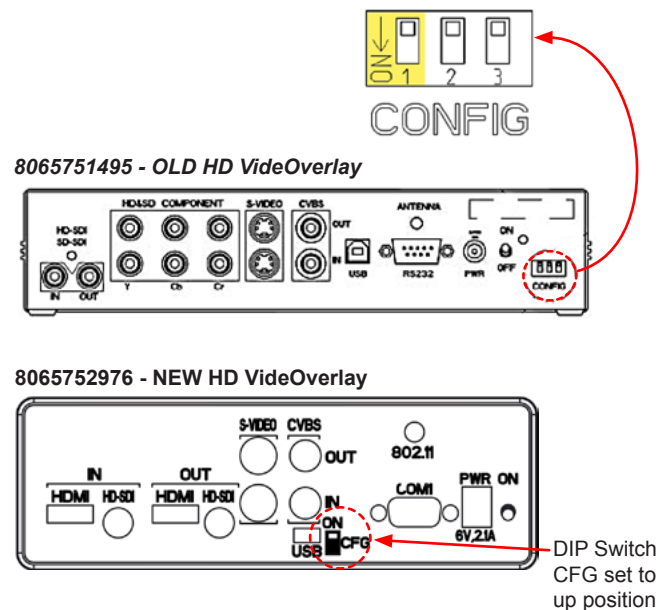


Figure 4-25 VideoOverlay DIP Switch Setting

- 8.2.2 Ensure power is applied to VO.
- 8.2.3 Connect Serial Cable p/n 210-2756-501 between laptop and VO DB9 connector labeled RS232.
- 8.3 Start WDCU program on laptop.
- 8.4 Select COM1 or appropriate COM# associated with laptop serial port.
- 8.5 Click on Connect.
- 8.6 Follow instructions regarding VO power off/on (for Standard VO, power off/on Lantronix WiBox).
- 8.7 Enter an SSID and select appropriate Locale from drop-down list.
- 8.8 Click on Save.
- 8.9 Close WDCU and disconnect data cable from VO or Lantronix WiBox.
- 8.10 Turn off power to VideoOverlay box.
- 8.11 Turn on power to VideoOverlay box as follows:
 - 8.11.1 For old HD VideoOverlay, turn on the VideoOverlay. In case of Standard VO, remove power from VO and Lantronix box then reapply power.
 - 8.11.2 For new HD VideoOverlay, set DIP Switch CFG to the down position and turn on the VideoOverlay.
- 8.12 On Centurion* wireless screen, enter the same SSID and Network Region (Locale) as entered in step [8.7](#). Ensure WiFi Network is set to On. Select green check mark icon to save.
- 8.13 Test to ensure wireless VideoOverlay is functioning properly through the wireless network.

9. WIRELESS VIDEOOVERLAY CONFIGURATION (for software version 2.04)

NOTE: There are two HD VideoOverlays available for the system: 8065751495 referred to as the "old HD VideoOverlay" and 8065752976 referred to as the "new HD VideoOverlay."

- 9.1 Turn the *Centurion** system on.
- 9.2 DIP Switch Settings:
 - 9.2.1 For old HD VideoOverlay, set DIP Switch 1 to the "ON" position (see [Figure 4-25](#)).
 - 9.2.2 For new HD VideoOverlay, set DIP Switch CFG to the up position (see [Figure 4-25](#)).
- 9.3 Connect the 50 foot serial cable (023-082, shipped with HD VideoOverlay box) from the *Centurion** Rear Panel serial port (female) to the VideoOverlay box serial port (male).

NOTE: If the 50 foot cable is not available, serial cable PN 210-2756-501 can be used but will require a DB9 Gender Changer to connect to the female serial port on the *Centurion Rear Panel.**
- 9.4 Turn the VideoOverlay on.
- 9.5 On the *Centurion** system, enter service mode, select Configuration tab, and select VideoOverlay tab (see [Figure 4-26](#)).
- 9.6 Select Connect To VideoOverlay .
- 9.7 System will display "Turn off the VideoOverlay box for 5 seconds, then turn it back on."
 - 9.7.1 For old HD VideoOverlay, follow instructions regarding VideoOverlay box power off/on.
 - 9.7.2 For new HD VideoOverlay, the displayed message will go away automatically within three seconds and no action is needed.
- 9.8 The Configuration Parameter should be active and ready for configuration as shown in [Figure 4-26](#).
- 9.9 If necessary, configure Network Region (North America, Japan, Europe) by pressing the Network Region button and selecting the appropriate region from the displayed list.

- 9.10 Configure SSID by select "Change SSID" and then "New SSID" (see [Figure 4-27](#)). Enter a valid SSID and select the green check icon.
- 9.11 Select green check mark to save SSID.
- 9.12 Select "Update VideoOverlay Configuration." When complete, close the Service window.
- 9.13 Turn off VideoOverlay box and remove serial cable.
- 9.14 Turn on VideoOverlay box as follows:
 - 9.14.1 For old HD VideoOverlay, turn on the VideoOverlay.
 - 9.14.2 For new HD VideoOverlay, set DIP Switch CFG to the down position and turn on the VideoOverlay.
- 9.15 On *Centurion** wireless screen, enter the same SSID and Network Region. Ensure WiFi Network is set to On. Select green check mark icon to save.
- 9.16 Test to ensure wireless VideoOverlay is functioning properly through the wireless network.



Figure 4-26 VideoOverlay Configuration Screen



Figure 4-27 VideOverlay SSID Entry Screen

10. LANGUAGE PACK INSTALLATION

- 10.1 Insert USB media containing prepared language pack. (Refer to the Technical Services *Centurion** Intranet page for instructions on preparing the *Centurion** Language Translation Tool (LTT).
- 10.2 Go to the Service screen.
- 10.3 Go to the Localization tab:
 - 10.3.1 For 2.01 and 2.03 software, select Localization tab.

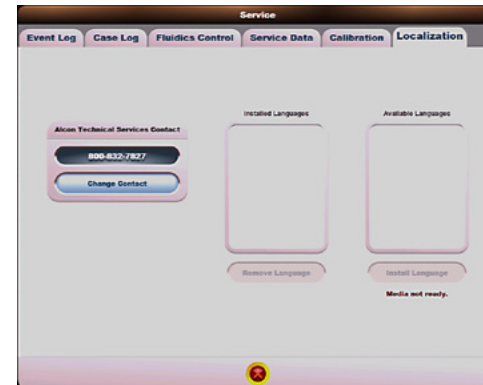


Figure 4-28 Localization Tab for 2.01 and 2.03 Software Versions

- 10.3.2 For 2.04 software, select Configuration tab, then Localization tab.



Figure 4-29 Localization Tab for 2.04 Software Version

- 10.4 Select Install Language button to complete the installation.

11. DISABLE OF NETWORK WI-FI (not footswitch wireless)

11.1 Software Disable:

- 11.1.1 From the Setup Status Menu, press the Custom button located on the right side of the screen.
- 11.1.2 Select System Settings then press the Wireless tab.
- 11.1.3 In the Wi-Fi Network field, press the Off button.

NOTE: Software Disable does not turn off the Wi-Fi beacon at start up. To disable the board completely continue to the next step.

11.2 Hardware Disable:

- 11.2.1 Remove Upper and Lower Rear Panels (see Section 3 for detailed instructions).
- 11.2.2 On Rear Panel I/O-Wireless Module Assembly, move switch S2 into the off position to disable network wireless activity (see [Figure 4-30](#) for switch location).

NOTE: LED DS3 illuminates green when Wi-Fi is on, and is not illuminated when Wi-Fi is off.

- 11.2.3 Replace Upper and Lower Rear Panels.

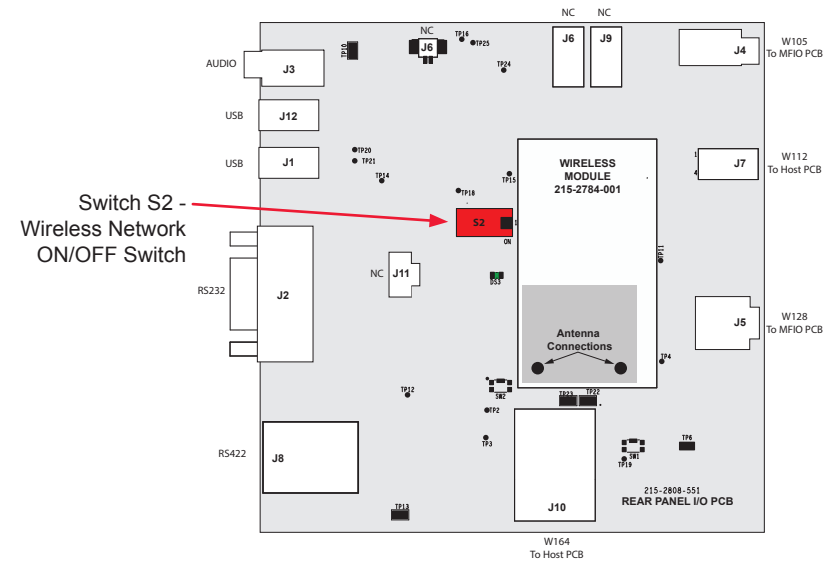


Figure 4-30 Wireless Network ON/OFF Switch on Rear Panel I/O-Wireless Module Assembly

12. PNEUMATICS CALIBRATION

The purpose of this procedure is to provide instructions calibration of the Centurion pneumatic module. Calibration is required if the results of testing do not meet specification.

TEST EQUIPMENT

- Fluke Scopemeter Series 124, Alcon P/N 401-041
- Assy, Pneumatic Test Tubing, Cent; Alcon P/N 316-3020-502
- Transducer Test Fixture, 202-1909-502
- Cable Assy RG59, BNC/BNC, Alcon P/N 023-042
- Two-shielded BNC to Banana Adapter , Fluke P/N BB120

12.1 VALVE CALIBRATION

- 12.1.1 After console power up, insert cassette and prime system.
- 12.1.2 From the Setup screen, press the Custom Menu (Gear) button on the touchscreen then select "About".
- 12.1.3 Alternately tap on each side of the word "About" to enter the Service Screen.
- 12.1.4 Select "Calibration" tab.
- 12.1.5 Press "Calibrate Vit" button to bring up "Calibrate Vit" Screen (see [Figure 4-31](#)).

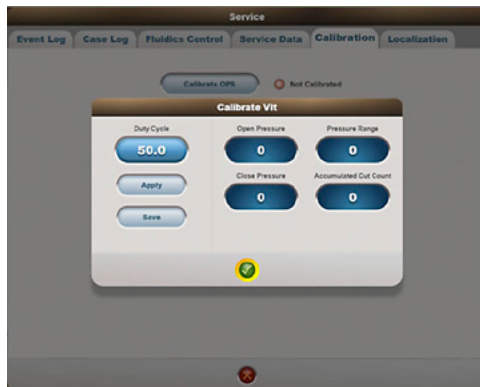


Figure 4-31 The Calibrate Vit Screen in Service Mode

- 12.2 Connect transducer box to Scopemeter using the BNC-to-BNC cable.
 - 12.3 Turn on the Scopemeter and transducer box.
 - 12.4 Set the Scopemeter voltage (vertical) to 200 mv/div.
 - 12.5 Set the Scopemeter time base (horizontal) to 1 sec/div.
 - 12.6 Ensure Scopemeter cursors are off and then select "A MOVE" and center zero reference line. Turn cursors on when zero reference line is centered and choose Horizontal cursors.
 - 12.7 Connect the test tubing set (316-3020-502) from console's two pneumatic ports to the pressure transducer box. Make sure console close line port (black fitting) connects to "Pressure" port of the pressure transducer box through the tubing set.
 - 12.8 Select and position bottom horizontal cursor at zero reference line then select and move 2nd horizontal cursor to near top of screen.
 - 12.9 Depress the footswitch treadle and hold down for 10 seconds.
 - 12.10 Wait for pump to stop, then wait an additional 10 seconds.
 - 12.10.1 When Scopemeter meter clears, fully depress the footswitch treadle to run VIT until the waveform almost fills the Scopemeter display.
 - 12.10.2 Immediately press "HOLD" to catch the pressure waveform. Release footswitch treadle.
- NOTE: The captured image must be similar in appearance to [Figure 4-32](#). If necessary to recapture the waveform, repeat steps [12.9](#) and step [12.10](#). Depressing the footswitch treadle when the Scopemeter sweep reaches the end of the Scopemeter display helps the waveform to begin at the beginning of the next sweep.**
- 12.11 Refer to waveform samples in [Figure 4-32](#) and [Figure 4-33](#), and determine if the waveform is normal or abnormal.
 - If the waveform is normal, continue to the next step.
 - If the waveform is abnormal, replace the Front Manifold/Fluidics PCB Assembly.

12.12 Refer to [Figure 4-32](#) for Min. Peak locations. Use the horizontal cursor near the top of the screen to note the Min. Peak Close value.

12.13 Move the top horizontal cursor to the zero reference line and use the bottom horizontal cursor to note the Min. Peak Open value.

12.14 Compute VDC Bias by adding the VDC's of Min. peaks.

Example 1:

Min Peak Close = 650 mV; Min Peak Open = -630mV

$650 + (-630) = 20 \text{ mV}$

12.15 If VDC Bias > 0 but $\leq 30 \text{ mV}$, press "Save" button on console screen then go to step [12.19](#).

12.16 If VDC Bias < 0 or $> 30 \text{ mV}$, the system needs VDC Bias calibration. Continue to step [12.17](#).

Example 2 (needs VDC Bias calibration):

Min Peak Close = 536 mV, Min Peak Open = -615mV

$536 + (-615) = -79 \text{ mV}$

12.17 VDC Bias Calibration

12.17.1 In the Service screen under the Calibration tab, select Calibrate Vit then press the Duty Cycle value button.

12.17.2 - If VDC Bias is below 0 (a negative number as in example 2), add 0.3 to the value shown on the Duty Cycle, enter the new duty cycle value and select Apply. **NOTE: Using 0.1 or 0.2 will result in a finer adjustment and may be used if this step is repeated.**

- If VDC Bias is $> 30 \text{ mV}$, subtract 0.3 from the value shown on the Duty Cycle, enter the new duty cycle value and select Apply. **NOTE: Using 0.1 or 0.2 will result in a finer adjustment and may be used if this step is repeated.**

Examples: If the Duty Cycle value is 53.2 and the VDC Bias is negative number as in example 2, the new duty cycle value should be: $53.2 + 0.3 = \mathbf{53.5}$

If the Duty Cycle value is 53.2 and the VDC Bias is $> 30 \text{ mV}$, the new Duty Cycle value should be: $53.2 - 0.3 = \mathbf{52.9}$

NOTE: If the new/adjusted Duty Cycle value is < 50 or > 57 , stop the test. The valve cannot be calibrated and the Front Pneumatic Manifold/Fluidics PCB must be replaced.

12.17.3 Recapture the waveform (see steps [12.9](#) - [12.19](#)) and verify that VDC Bias is > 0 but $\leq 30 \text{ mV}$.

- If the value is within specification, select **SAVE**, exit Service Mode, and continue to the next step.

- If not, return to step [12.17.1](#) and repeat calibration adjustment until value is within specification.

12.18 In the Surgery screen (not Service Mode), perform the following steps up to three times to verify that calibration was successful.

12.18.1 Depress the footswitch treadle briefly then wait for the pump to stop, then wait an additional 10 seconds.

12.18.2 When Scopemeter meter clears, fully depress the footswitch treadle to run VIT until the waveform almost fills the Scopemeter display, then immediately press "HOLD" to catch the pressure waveform. Release footswitch treadle.

12.18.3 Repeat steps [12.18.1](#) and [12.18.2](#) to check the waveform, capture VDC Min. peak values, and compute the VDC Bias.

If, after three tries the VDC bias does not fall into specified range, stop the test. The pneumatics module is unstable and the Front Pneumatic Manifold/Fluidics PCB must be replaced.

12.19 Exit "Calibrate Vit" Screen by pressing the Check Mark Button.

12.20 Under "Calibration" Screen, verify the indicator light by the "Calibrate Vit" button is green and Text "Calibrated" is shown next to it.

12.21 Back out of Service screen.

12.22 Perform the Pneumatic Test section of the Centurion STP.

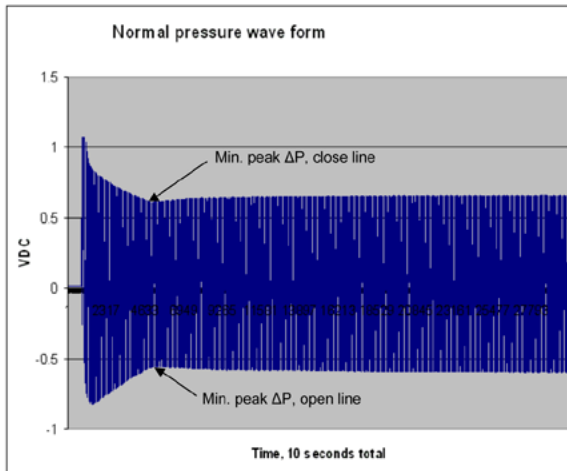


Figure 4-32 Normal Pressure Signal Sample

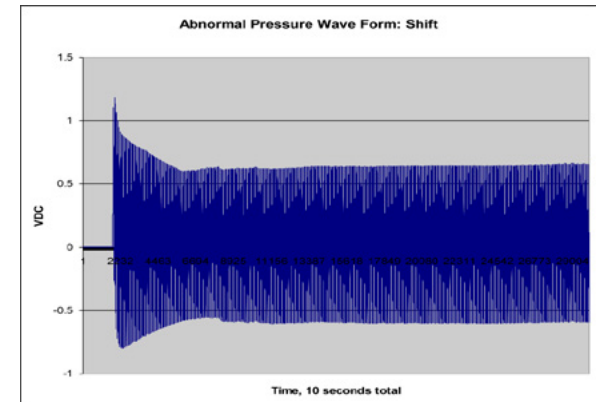
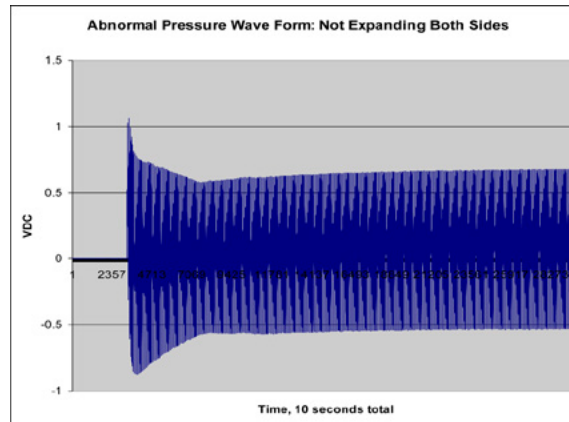
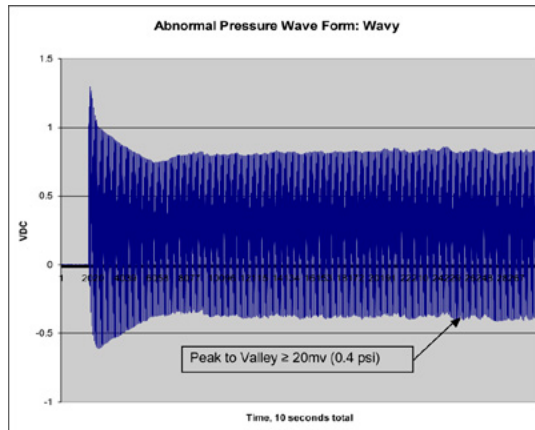


Figure 4-33 Abnormal Pressure Signal Samples

13. BAG PRESSURE SENSOR (BPS) CALIBRATION

NOTE: Perform this procedure after the BPS has been removed and replaced, or the system software has been upgraded from below build 38.

- 13.1 If necessary, remove FMS and *Active Fluidics** Bag from system.
- 13.2 Go to Service Mode.
- 13.3 Select "BPS Calibration Data" from Service Screen.
- 13.4 Select "Zero Calibrate BPS" then verify that "Calibration Succeeded" is displayed.
- 13.5 Exit Service Mode.

14. CLEANING THE SYSTEM AIR FILTERS

- 14.1 Remove the Lower Front Panel per Section Three of this manual.
- 14.2 Loosen four 3 mm captive screws securing the Front Retainer to the panel (see [Figure 4-34](#)). Remove Front Retainer and filter.

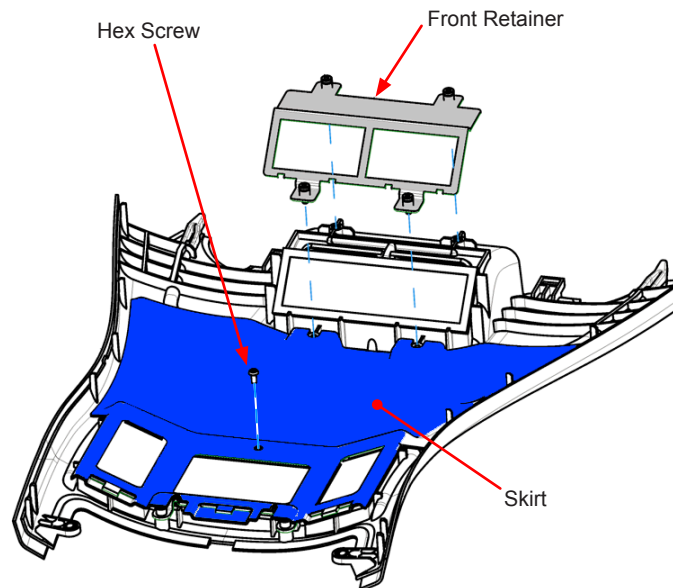


Figure 4-34 Lower Front Panel - Front Retainer and Skirt Removal

- 14.3 Remove 2.5 mm hex screw securing Skirt to Panel. Remove Skirt from Panel.
- 14.4 Loosen four 3 mm captive screws securing Filter Bracket to panel (see [Figure 4-35](#)). Remove Filter Bracket and three filters.

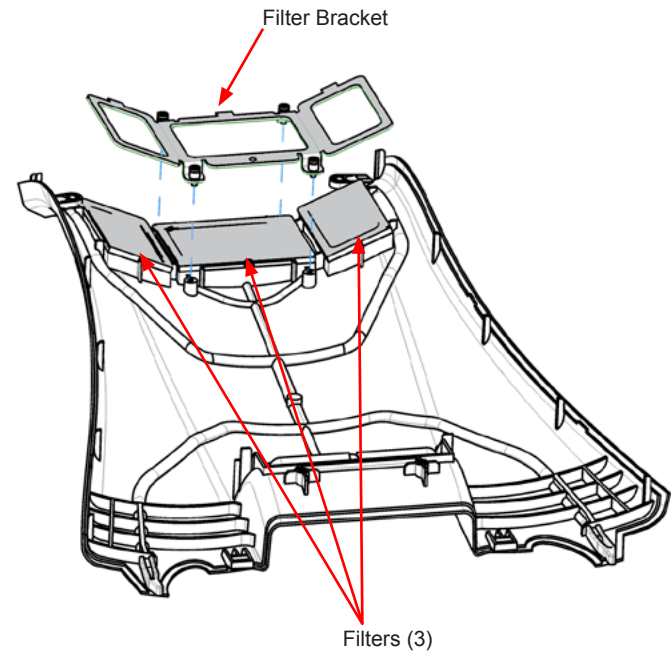


Figure 4-35 Lower Front Panel - Filter Bracket and Filter Removal

- 14.5 Clean four filters with water then shake dry.
- 14.6 Reassemble Front Panel assembly by performing this procedure in reverse order.

CAUTION

Filters are marked with an air flow direction arrow. Ensure that filters are positioned for air flowing into the system.

15. CONSOLE AND WIRELESS FOOTSWITCH BATTERY STATE OF HEALTH (SOH) CHECK (REL_2.04 ONLY)

- 15.1 Ensure wireless footswitch is paired to the console and placed on floor. Otherwise, the footswitch battery SOH will not be available.
- 15.2 Access Service screen.
- 15.3 Select Diagnostics tab then Battery tab (see [Figure 4-36](#)).



Figure 4-36 Battery State of Health Screen

- 15.4 Select "Check SOH" and wait for its completion. This process should take around 50 minutes.
- 15.5 Replace battery if necessary.

16. ADJUSTMENT OF DISPLAY ASSEMBLY ROTATION TENSION

- 16.1 Remove the following panels per disassembly procedures in Section Three.
 - Front Vent Panel
 - Upper Front Panel
 - Lower Front Panel
- 16.2 Remove the following components:
 - Ultrasonics (U/S) Controller Assembly
 - Fluidics Module and Fluidics Controller Assembly.
- 16.3 With one hand holding the Display Assembly, loosen a 1.5 inch nut on the Display Arm Base Mount Assembly using channellock plier as shown in [Figure 4-37](#).

NOTE: Do not loosen the nut more than half a turn. Loosen more than half a turn could cause tension to roller bearing on Display Arm Base Rotating Hub to be too loose.

Loosen 1.5 inch Nut Using Channellock Plier

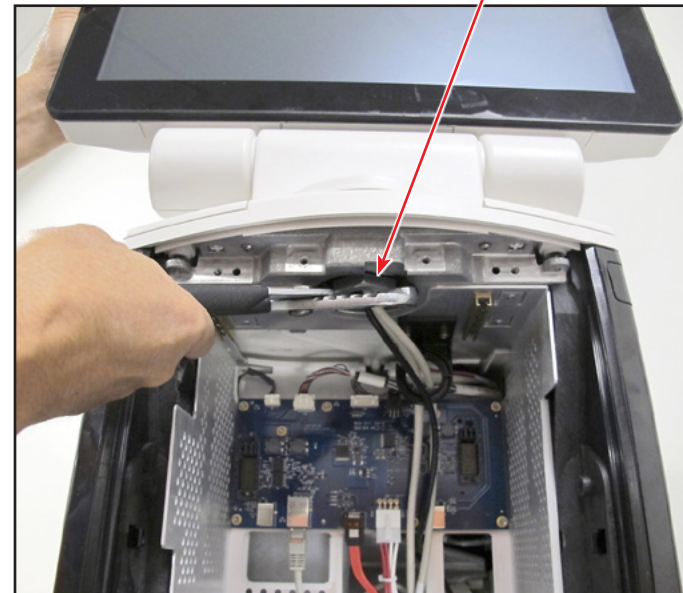


Figure 4-37 Display Rotation Adjustment

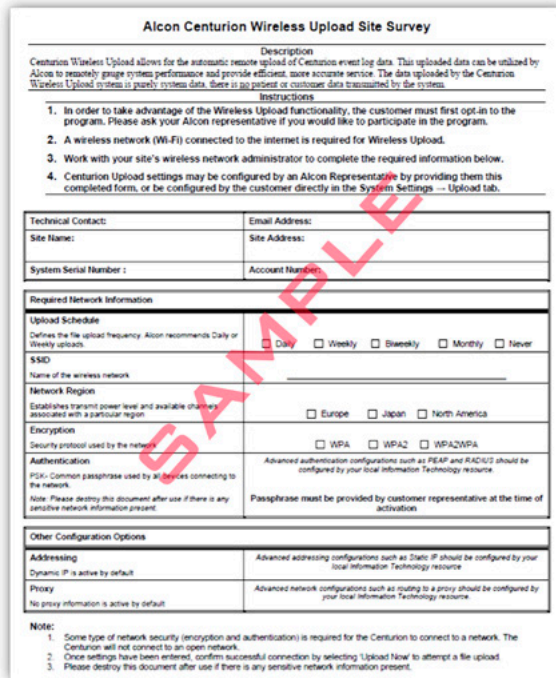
17. WIRELESS EVENT LOG UPLOAD SETUP

17.1 Alcon Centurion* Wireless Upload Site Survey

- 17.1.1 Ensure system being setup is running 2.04 or later software. If not, upgrade system software to latest compatible version.
- 17.1.2 Obtain a copy of customer completed Alcon Centurion Wireless Upload Site Survey form shown in [Figure 4-38](#).

NOTES:

- The most important information to have on the form is the SSID name, Encryption type and the Authentication passphrase.
- If the customer prefers, they can have the IT representative complete the Centurion wireless setting input section of this process.



Alcon Centurion Wireless Upload Site Survey

Description
Centurion Wireless Upload allows for the automatic remote upload of Centurion event log data. This uploaded data can be utilized by Alcon to remotely gauge system performance and provide efficient, more accurate service. The data uploaded by the Centurion Wireless Upload system is purely system data, there is no patient or customer data transmitted by the system.

Instructions

- In order to take advantage of the Wireless Upload functionality, the customer must first opt-in to the program. Please ask your Alcon representative if you would like to participate in the program.
- A wireless network (Wi-Fi) connected to the internet is required for Wireless Upload.
- Work with your site's wireless network administrator to complete the required information below.
- Centurion Upload settings may be configured by an Alcon Representative by providing them this completed form, or be configured by the customer directly in the System Settings → Upload tab.

Technical Contact: _____ **Email Address:** _____
Site Name: _____ **Site Address:** _____
System Serial Number: _____ **Account Number:** _____

Required Network Information

Upload Schedule
 Defines the file upload frequency. Alcon recommends Daily or Weekly uploads. ☐ Daily ☐ Weekly ☐ Biweekly ☐ Monthly ☐ Never

SSID
 Name of the wireless network: _____

Network Region
 Establishes transmit power level and available channels associated with a particular region. ☐ Europe ☐ Japan ☐ North America

Encryption
 Security protocol used by the network. ☐ WPA ☐ WPA2 ☐ WPA2/WPA

Authentication
 PSK: Common passphrase used by all devices connecting to the network. Advanced authentication configurations such as PEAP and RADIUS should be configured by your local Information Technology resource.
 Note: Please destroy this document after use if there is any sensitive network information present. Passphrase must be provided by customer representative at the time of activation.

Other Configuration Options

Addressing
 Dynamic IP is active by default. Advanced addressing configurations such as Static IP should be configured by your local Information Technology resource.

Proxy
 No proxy information is active by default. Advanced network configurations such as routing to a proxy should be configured by your local Information Technology resource.

Note:

- Some type of network security (encryption and authentication) is required for the Centurion to connect to a network. The Centurion will not connect to an open network.
- Once settings have been entered, confirm successful connection by selecting 'Upload Now' to attempt a file upload.
- Please destroy this document after use if there is any sensitive network information present.

Figure 4-38 Sample Wireless Upload Site Survey Form

17.2 Enable Event Log Upload On The Centurion Console (Alcon Field Service Only)

- 17.2.1 Navigate to Service mode.
- 17.2.2 Select Configuration tab then Features sub-tab.
- 17.2.3 Select Change Feature Availability to enable uploading of events (see [Figure 4-39](#)).



Figure 4-39 Service Mode\Configuration\Features - Change Feature Availability

- 17.2.4 In Change Feature Availability popup window shown in [Figure 4-40](#), select Production for Upload Server and select On for Upload Events.

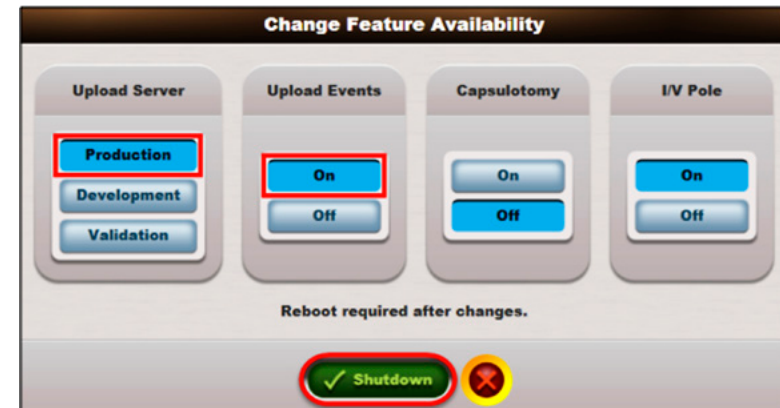


Figure 4-40 Change Feature Availability Popup

- 17.2.5 To save and activate setting, select the green Shutdown button. The system must reboot to activate the upload functionality.

17.3 Centurion* Wireless Settings

NOTE: This section can be initially setup by the customer's IT representative. Changes can be made as needed in the future.

17.3.1 Navigate to System Settings and select the Upload tab (see [Figure 4-41](#)).



Figure 4-41 System Settings\Upload Tab

Note: For systems with software 3.0 and above, the Network Region setting is located in Service mode on the Configuration/Region tab.

NOTES:

- Settings for SSID, Network Region, Encryption, and Authentication are required for every setup.
- Addressing and Proxy settings are only needed if the customer's IT representative requires them.
- All information will be included on the Alcon Wireless Site Survey.

17.3.2 UPLOAD SCHEDULE

17.3.2.1 Press the button in this field and select the desired time period from the list shown in [Figure 4-42](#). The recommended time period is "Weekly".

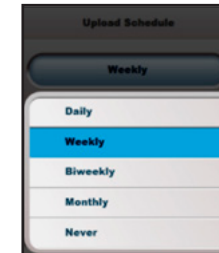


Figure 4-42 Upload Schedule Selections

17.3.3 SSID

17.3.3.1 Press Change SSID button, then input the wireless networks SSID name (see [Figure 4-43](#)). As a general rule they do not contain spaces or special characters.

17.3.3.2 Confirm the SSID is correct, as compared with that provided by the customer, then press green check button to save.

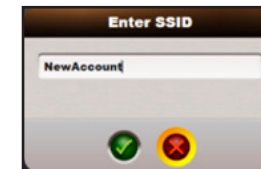


Figure 4-43 SSID Entry Screen

17.3.4 NETWORK REGION

17.3.4.1 Press the button below Network Region then select region from list that is appropriate for country where system will be used (see [Figure 4-44](#)). Note: For systems with software 3.0 and above, the Network Region setting is located in Service mode on the Configuration/Region tab.

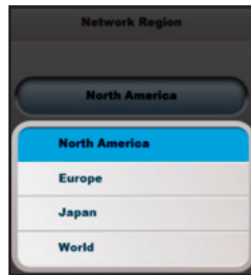


Figure 4-44 Network Region Selections

17.3.5 ENCRYPTION

17.3.5.1 Press the button below Encryption then select the Encryption type from the popup window. The Centurion* system only supports WPA, WPA2 and WPA2WPA; if the account has something other than these three we are unable to support the setup.



Figure 4-45 Encryption Type Selections

17.3.6 AUTHENTICATION

17.3.6.1 Press Change Authentication button, then touch the Change button and enter the Pre-Shared Key passcode provided by the account (see [Figure 4-46](#)).

17.3.6.2 Verify the Pre-Shared Key is correct, as compared with that provided by the customer, then save by touching the green check button.

17.3.6.3 Once again save by touching the green check button in the Upload Authentication popup window.



Figure 4-46 Authentication Screens

17.3.7 ADDRESSING (Optional)

The Upload Addressing selections are shown in [Figure 4-47](#). If account requires this option completed they should arrange to have the IT representative complete this section. Dynamic IP is enabled by default.

Figure 4-47 Upload Addressing Selections

17.3.8 PROXY (Optional)

The Upload Proxy selections are shown in [Figure 4-48](#). If account requires this option completed they should arrange to have the IT representative complete this section. No proxy information is active by default.

Figure 4-48 Upload Proxy Selections

17.4 Test Upload

17.4.1 Navigate to Upload tab in System Settings as shown in [Figure 4-49](#).

Figure 4-49 System Settings\Upload - Upload Now

17.4.2 Select Upload Now to begin event log upload process. A popup window appears with the following message:

After upload, the system will shut down immediately when the System Settings Dialog is closed.

Upload Now?

17.4.3 Touch the green check button to complete the upload process.

Figure 4-50 Upload in Progress Popup

17.4.4 When upload is complete, touch red X at bottom of System Setting screen to exit. The system will automatically shut down.

17.5 Successful Upload

When Upload completes successfully, it ensures Centurion* network settings have been entered properly.

17.5.1 Save system settings by clicking the Green Checkbox.

NOTE: If you click the Red X, all settings will be discarded.

17.5.2 System will shut down.

17.5.3 Feature activation is now complete.

17.6 Troubleshooting An Unsuccessful Upload

17.6.1 If the message states "Failed to Obtain IP," there is a problem connecting to the local network.

17.6.1.1 Ensure PSK is entered correctly (it is case sensitive).

17.6.1.2 Ensure Encryption type matches that of the network (test all 3).

17.6.1.3 Ensure there is sufficient signal strength (connect to network with another wireless device to test).

17.6.2 If the upload fails when progress bar is beyond 50% mark, there is likely a problem transferring data to the Axeda Server.

17.6.2.1 Wireless Network settings are entered correctly, do not change them.

17.6.2.2 Retry upload (sometimes there is a temporary slowdown).

17.6.2.3 Ensure there is sufficient signal strength (connect to network with another wireless device to test connection speeds).

17.6.2.4 It is possible the Axeda Server is temporarily not responding.

17.6.2.5 No further troubleshooting can be performed from the Centurion* system.

17.6.2.6 Save network settings as in step [17.5](#).

17.7 Feature activation is now complete.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
FLUIDICS MECHANISM – 1XX					
101	Warning	<p>Fluidics not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	<ol style="list-style-type: none"> 1) Prime, Fill and Test buttons are disabled. 2) System goes to Not Primed status. 3) Phaco handpieces go to Not Tested status. 	<ul style="list-style-type: none"> • Check W101 cable from MFIO (J1) to Upper Backplane PCB (J4). This is the 24VDC supplied to the Fluidics and US Controller PCBs. • Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3). • Check Blind Mate connection from Upper BackPlane PCB to Fluidic PCB. • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly& reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
103	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Fluidics Software/logicware. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
105	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Fluidics Software/logicware. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
106	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Fluidics Software/logicware. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
107	Warning	Same as previous entry.	Irrigation valve failed.	Same as previous entry.	<ul style="list-style-type: none"> Check Irrigation valve and its connection. Replaced if necessary. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
108	Warning	Same as previous entry.	Irrigation valve speed failure.	Same as previous entry.	<ul style="list-style-type: none"> Check Irrigation valve and its connection. Replaced if necessary. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
109	Warning	Same as previous entry.	Vent valve direction failure.	Same as previous entry.	<ul style="list-style-type: none"> Check Vent valve and its connection. Replaced if necessary. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
110	Warning	Same as previous entry.	Vent speed failure.	Same as previous entry.	<ul style="list-style-type: none"> Check Vent valve and its connection. Replaced if necessary. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
111	Warning	Same as previous entry.	Pump direction failure.	Same as previous entry.	<ul style="list-style-type: none"> Check Pump motor and its connection. Replaced if necessary. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
112	Warning	Same as previous entry.	Pump speed failure.	Same as previous entry.	<ul style="list-style-type: none"> • Check W114 from Fluidics Module to Fluidics PCB and replace if necessary. • Check Hub Rollers assembly for looseness and secure locking screw. • Check Pump motor and its connection. Replace Fluidics Module if necessary. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
113	Warning	Same as previous entry.	OPS software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload OPS software. • Replace Fluidics PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration). • Replace Fluidics Module assembly and reload OPS software if necessary.
114	Warning	Same as previous entry.	OPS laser failure.	Same as previous entry.	<ul style="list-style-type: none"> • Check W117 from the OPS PCB to Fluidics PCB and replace if necessary. • Replace Fluidics Module assembly and reload OPS software if necessary. • Replace Fluidics PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
115	Warning	Same as previous entry.	OPS image failure.	Same as previous entry.	<ul style="list-style-type: none"> • Check W117 from the OPS PCB to Fluidics PCB and replace if necessary. • Replace Fluidics Module assembly and reload OPS software if necessary. • Replace Fluidics PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
116	Warning	Same as previous entry.	OPS board failure.	Same as previous entry.	<ul style="list-style-type: none"> Check W117 from the OPS PCB to Fluidics PCB and replace if necessary. Replace Fluidics Module assembly and reload OPS software if necessary. Replace Fluidics PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
117	Warning	Same as previous entry.	Bag ID software failure.	Same as previous entry.	<ul style="list-style-type: none"> Reload Bag ID software/Bootloader. Replace Bag ID Reader assembly and reload Bag ID software/Bootloader if necessary.
118	Warning (Active Sentry only)	Same as previous entry.	HPS software failure.	Same as previous entry.	<ul style="list-style-type: none"> Reload HPS software. Replace U/S Controller PCB & reload U/S software/logicware is necessary.
120	Warning	Same as previous entry.	FMS latch motor current failure.	Same as previous entry.	<ul style="list-style-type: none"> Replace latch motor. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration). Replace Fluidics Module assembly.
121	Warning	Same as previous entry.	Backup power failure (Supercaps).	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
126	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
127	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
128	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
129	Warning	Same as previous entry.	Footswitch mechanism fault.	Same as previous entry.	Same as previous entry.
130	Warning	Same as previous entry.	Footswitch mechanism timeout.	Same as previous entry.	Same as previous entry.
131	Warning	Same as previous entry.	Footswitch mechanism range error.	Same as previous entry.	Same as previous entry.
135	Warning	Same as previous entry.	Tone mechanism fault.	Same as previous entry.	Same as previous entry.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
136	Warning	Same as previous entry.	Tone mechanism timeout.	Same as previous entry.	Same as previous entry.
137	Warning	Same as previous entry.	Tone mechanism range error.	Same as previous entry.	Same as previous entry.
138	Warning	Same as previous entry.	Operator Control mechanism fault.	Same as previous entry.	Same as previous entry.
139	Warning	Same as previous entry.	Operator Control mechanism timeout.	Same as previous entry.	Same as previous entry.
140	Warning	Same as previous entry.	Operator Control mechanism range error.	Same as previous entry.	Same as previous entry.
144	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
145	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
146	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
149	Warning	Same as previous entry.	IA subsystem fault.	Same as previous entry.	Same as previous entry.
150	Advisory	Irrigation bag empty. Recommended actions: 1) Release footswitch treadle. 2) Remove handpiece from eye. 3) Replace bag.	Bag fluid level critically low. Note: This Advisory is generated by the Host based on real-time status. Note: This advisory is displayed only in Active Irrigation Mode. It is displayed in Phaco, I/A, Vitrectomy, Fill, and Irrigation Footswitch Steps. It is displayed when the condition initially occurs and whenever any of these step types is entered, but not when transitioning between steps of the same step type.	1) Aspiration is disabled until the low volume condition no longer exists and the footswitch treadle has been released to FP1. 2) A “ Return to Setup Screen ” Button is provided in the advisory dialog. 3) After the user dismisses the advisory it is redisplayed if the condition still exists and the footswitch treadle is depressed from FP0. 4) This advisory is automatically dismissed if the FMS is removed.	<ul style="list-style-type: none"> Active Irrigation bag fluid is empty. Replace bag. Replace AI motor assembly and perform the AI Plate Travel Calibration. Replace AI Module and perform AI Plate Travel Calibration.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
151	Advisory	<p>Irrigation bag empty.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Replace bag. 	<p>Bag fluid level critically low.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p> <p>Note: This advisory is only displayed in the Setup Screen in Active Irrigation Mode when the footswitch treadle is not in FP0.</p>	<p>1) After the user dismisses the advisory it is redisplayed if the condition still exists and the footswitch treadle is depressed from FP0.</p> <p>2) This advisory is automatically dismissed if the FMS is removed.</p>	<ul style="list-style-type: none"> • Active Irrigation bag fluid is empty. Replace bag. • Replace AI motor assembly and perform the AI Plate Travel Calibration. • Replace AI Module and perform the AI Plate Travel Calibration.
153	Advisory	<p>Bag bay door open.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Close door. 2) Proceed with surgery. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Remove handpiece from eye. 2) Press 'Return to Setup Screen'. 	<p>Bag bay door opened in Surgery Screen while Active Irrigation FMS is inserted.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p> <p>Note: This advisory is displayed only in Phaco, I/A, Vitrectomy, Fill, or Irrigation Footswitch Steps in Active Irrigation Mode. It is displayed when the condition initially occurs and whenever any of these step types is entered, but not when transitioning between steps of any of these step types.</p>	<p>1) Irrigation remains enabled. Aspiration, phaco, and vitrectomy are disabled while the door is open.</p> <p>2) A "Return to Setup Screen" Button is provided in the advisory dialog.</p> <p>3) This advisory is automatically dismissed if the door is closed.</p> <p>4) This advisory is automatically dismissed if the FMS is removed.</p> <p>5) After the user dismisses the advisory, it is redisplayed if the door is still open and the footswitch treadle is depressed from FP0 in a Phaco, I/A, Vitrectomy, Fill, or Irrigation Footswitch Step.</p>	<ul style="list-style-type: none"> • Close bay door. • Check Sliding Cover sensor/cable connection and if necessary. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration).
154	Advisory	<p>Bag bay door was opened.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Close bag door. 2) Repeat operation. 	<p>Bag bay door opened while Active Irrigation FMS is inserted and prime, fill, or tune is in progress.</p> <p>Note: This Advisory is generated only in the Setup Screen.</p>	<p>Prime, fill, or tune is canceled.</p>	<ul style="list-style-type: none"> • Close bay door. • Check Sliding Cover sensor/cable connection (W187) and replace if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
155	Advisory	Irrigation bag is almost empty. Recommended actions: Replace bag.	Bag fluid level not sufficient for current operation (prime, fill, etc.).	Commanded operation is not performed.	<ul style="list-style-type: none"> Active Irrigation bag fluid is almost empty. Replace bag. Replace AI motor assembly and perform AI Plate Travel Calibration. Replace AI Module and perform AI Plate Travel Calibration.
156	Advisory	Active Fluidics is not available. Recommended actions: 1) Remove FMS. 2) Use Gravity Fluidics. 3) If condition persists, note Advisory number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Active Irrigation failed homing.	1) System goes to Not Primed status. 2) If the advisory occurs on FMS insertion, the FMS is rejected.	<ul style="list-style-type: none"> Check AI motor home sensor/cable connection (W187) and replace if necessary. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
157	Advisory	Active Fluidics is not available. Recommended actions: 1) Remove FMS. 2) Use Gravity Fluidics. 3) If condition persists, note Advisory number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Active Irrigation actuator failed. Note: This advisory will also be displayed for failed CRC verification of Active Irrigation calibration data.	1) System goes to Not Primed status. 2) After the user dismisses the advisory it is redisplayed if the condition still exists and the footswitch treadle is depressed from FP0 while an AI FMS is inserted in Phaco, I/A, Vitrectomy, and Irrigation Footswitch Steps, and in the AutoSert step only if the AutoSert IOP doctor setting is On.	<ul style="list-style-type: none"> Check motor/cable connection (W134, W187) and replace if necessary. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration). Replace AI module and perform AI Travel calibration and possible BPS calibration Data if required (Advisory 190).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
158	Advisory	<p>Aspiration, phaco power, and vitrectomy cutting are unavailable.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Check for irrigation path obstructions. 2) Replace FMS. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Unable to achieve IOP.</p> <p>Note: This Advisory can occur in any step, even those without IOP controls. This Advisory occurs only in FP2 or FP3.</p>	<p>Aspiration, phaco power, vitrectomy cutting, and possibly irrigation are temporarily disabled.</p>	<ul style="list-style-type: none"> • Replace Fluidic Module assembly and reload OPS software if necessary. • Replace Fluidics PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration). • Replace Active Irrigation assembly and perform BPS Calibration Data.
159	Advisory	<p>Irrigation is unavailable.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Replace FMS. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Excessive irrigation pressure.</p>	<p>Irrigation is disabled.</p> <p>After the user dismisses the advisory it is redisplayed if the condition still exists and the footswitch treadle is depressed from FP0.</p>	<ul style="list-style-type: none"> • Verify the bag is completely spiked and no kink or obstruction to the admin line. • Replace Fluidic Module assembly and reload OPS software if necessary. • Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration). • Replace Active Irrigation assembly and perform BPS Calibration Data.
160	Advisory	<p>FMS calibration failed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Reinsert FMS. 2) If condition persists, replace FMS. 	<p>FMS calibration failed. OPS imaging failure.</p>	<ol style="list-style-type: none"> 1) FMS is ejected. 2) The Advisory is automatically closed when an FMS is inserted. 	<ul style="list-style-type: none"> • Replace Fluidic Module assembly and reload OPS software if necessary. • Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
161	Advisory	Vacuum check failed. Recommended actions: 1) Check luer fittings and reprime. 2) If condition persists, reinsert or replace FMS. 3) If condition persists, note Advisory number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Vacuum check failed – low irrigation pressure.	System goes to Not Primed status.	<ul style="list-style-type: none"> Check BPS reading and recalibrate BPS Calibration if BPS reading is out of specs (see STP). If BPS Calibration cannot be achieved, then replace BPS cable assembly (W150 cable) and perform BPS Calibration twice. Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
162	Advisory	Same as previous entry.	Vacuum check failed – slow vacuum rise.	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
163	Advisory	Same as previous entry.	Vacuum check failed – slow irrigation vent.	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
164	Advisory	Same as previous entry.	Vacuum check failed – unable to verify pressure.	Same as previous entry.	<ul style="list-style-type: none"> Check BPS reading and recalibrate BPS Calibration if BPS reading is out of specs (see STP). If BPS Calibration cannot be achieved then replace BPS cable assembly (W150 cable) and perform BPS Calibration twice. Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
165	Advisory	Same as previous entry.	Vacuum check failed – low maximum vacuum.	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
166	Advisory	Same as previous entry.	Vacuum check failed – slow vent.	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
167	Advisory	Same as previous entry.	Vacuum check failed – excessive vacuum leak.	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
168	Advisory	<p>Flow obstruction.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Check handpiece free flow. 2) If condition persists, replace phaco tip or sleeve. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Flow check failed – excessive vacuum rise.	Selected Phaco handpiece goes to Not Tested status.	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
169	Advisory	<p>Irrigation pressure is low.</p> <p>Recommended actions:</p> <p>1) Check bottle fluid level.</p> <p>Alternate actions:</p> <p>1) Check for kinked lines or loose fittings.</p>	<p>Infusion pressure drop.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p> <p>Note: This advisory is only displayed in Surgery Mode, with Passive Irrigation enabled, when the footswitch treadle is not in FP0. It is displayed only in Phaco, I/A, Vitrectomy, and Irrigation Footswitch Steps.</p>	<p>1) Phaco power, Aspiration, and Vitrectomy cutting are disabled until the low infusion pressure condition no longer exists and the footswitch treadle has been released to FP0 or FP1.</p> <p>2) If the user doesn't dismiss the Advisory it will be automatically removed when the condition no longer exists.</p> <p>3) After the user dismisses the advisory it is redisplayed if the condition still exists and the footswitch treadle is depressed from FP0.</p>	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
170	Advisory	<p>Reflux terminated. Reflux fluid volume depleted. Reflux will be unavailable until fluid is aspirated.</p> <p>Recommended actions:</p> <p>1) Aspirate fluid.</p>	<p>Reflux terminated – reflux fluid volume depleted</p>	None	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
171	Advisory	<p>Drain bag is full.</p> <p>Recommended actions:</p> <p>Replace FMS.</p>	<p>Excessive pressure in drain bag (drain bag is full).</p> <p>Note: This advisory is displayed only during venting.</p>	None	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
172	Advisory	<p>Vacuum check failed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Check luer fittings and reprime. 2) If condition persists, reinsert or replace FMS. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Vacuum check failed – excessive sensor offset.	System goes to Not Primed status.	<ul style="list-style-type: none"> • Replace Fluidic Module assembly and reload OPS software if necessary. • Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
173	Advisory	Same as previous entry.	Vacuum check failed – excessive pressure drop (excessive admin resistance).	System goes to Not Primed status.	<ul style="list-style-type: none"> • Replace Fluidic Module assembly and reload OPS software if necessary. • Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
174	Advisory	<p>Flow obstruction.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Check handpiece free flow. 2) If condition persists, replace phaco tip or sleeve. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Flow check failed – excessive pressure drop (excessive admin resistance).</p> <p>Note: This advisory is displayed only in Active Irrigation Mode.</p>	<p>Selected Phaco handpiece goes to Not Tested status.</p>	<ul style="list-style-type: none"> • Replace Fluidic Module assembly and reload OPS software if necessary. • Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
175	Advisory (Active Sentry only)	<p>Handpiece calibration failed (middle connector port).</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Ensure handpiece is sufficiently cool after sterilization. 2) Disconnect handpiece tubing. 3) Press 'Retry'. 4) If condition persists, reinsert or replace handpiece. 5) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Zero calibration failed.</p> <p>Note: This advisory is displayed only upon insertion of a Centurion Active Sentry Handpiece.</p>	<p>1) A “Retry” Button is provided in the advisory dialog.</p> <p>2) The advisory is automatically dismissed if the handpiece is removed.</p>	<ul style="list-style-type: none"> • Check and replace middle U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
176	Advisory (Active Sentry only)	<p>Handpiece calibration failed (top connector port).</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Ensure handpiece is sufficiently cool after sterilization. 2) Disconnect handpiece tubing. 3) Press 'Retry'. 4) If condition persists, reinsert or replace handpiece. 5) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Same as previous entry.	Same as previous entry.	<ul style="list-style-type: none"> • Check and replace top U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
177	Advisory (Active Sentry only)	<p>Active Sentry features are unavailable (Auto PEL & Active Surge Mitigation and IOP Compensation for Leakage).</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Restart system. 2) If condition persists, note advisory number and contact Alcon Technical Services. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Press 'Continue without Active Sentry'. 2) Review settings prior to proceeding with surgery (adjust Fluidics surgical parameters as appropriate). <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>HPS Mechanism failed.</p> <p>Note: This advisory is displayed only in the Setup Screen.</p> <p>Note: This Advisory is displayed only if Active Sentry capable hardware is present and the Active Sentry Availability System setting is ON.</p>	<p>1) A "Continue without Active Sentry" button is provided in the advisory dialog.</p> <p>2) If the advisory is displayed before tuning and is dismissed with the "Continue without Active Sentry" button, then subsequent tunes are performed for the Centurion OZil Handpiece (not the Active Sentry handpiece).</p> <p>3) If the advisory is displayed during tuning and is dismissed with the "Continue without Active Sentry" button, then the tune is automatically restarted as a Centurion OZil handpiece tune.</p> <p>4) If the advisory is displayed during tuning and is dismissed with the "X" button then tuning fails.</p> <p>5) If the advisory is dismissed with the "Continue without Active Sentry" button, then Active Sentry features remain disabled until the handpiece is removed.</p> <p>6) The advisory is automatically dismissed if all Active Sentry handpieces are removed.</p>	<ul style="list-style-type: none"> • Replace Active Sentry HP. • Check and replace U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
178	Advisory (Active Sentry only)	<p>Active Sentry features are unavailable (Auto PEL & Active Surge Mitigation and IOP Compensation for Leakage).</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Remove handpiece from eye. 2) Restart system 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle. 2) Press 'Continue without Active Sentry'. 3) Review settings prior to proceeding with surgery (adjust Fluidics surgical parameters as appropriate). <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>HPS Mechanism failed.</p> <p>Note: This advisory is displayed only in the Surgery Screen, after a successful Active Sentry handpiece tune.</p> <p>Note: This Advisory is displayed only if Active Sentry capable hardware is present and the Active Sentry Availability System setting is ON.</p>	<ol style="list-style-type: none"> 1) Active Sentry features and phaco power are disabled. 2) A "Continue without Active Sentry" button is provided in the advisory dialog. 3) The advisory is automatically dismissed if all Active Sentry handpieces have been removed and the footswitch treadle has been released to FP0. 4) If the advisory has been dismissed with the "X" button, and the handpiece hasn't been removed, (a) phaco power remains disabled and (b) the advisory is redisplayed if the footswitch treadle is depressed from FP0 in a phaco step. 5) If the advisory has been dismissed with the "Continue without Active Sentry" button, phaco power remains disabled until the footswitch treadle has been released to FP0 and then depressed again, and Active Sentry features remain disabled until the handpiece is removed. 	<ul style="list-style-type: none"> • Replace Active Sentry HP. • Check and replace U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary
179	Advisory	<p>FMS barcode invalid.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Reinsert FMS 2) If condition persists, replace FMS. 	<p>Cassette calibration failed.</p> <p>Invalid barcode data.</p>	<ol style="list-style-type: none"> 1) FMS is ejected. 2) The Advisory is automatically closed when an FMS is inserted. 	<ul style="list-style-type: none"> • Replace Fluidic Module assembly and reload OPS software if necessary. • Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
180	Advisory	Invalid FMS ID. Recommended actions: 1) Reinsert FMS. 2) If condition persists, replace FMS.	Cassette calibration failed. Invalid cassette ID.	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
181	Advisory	FMS calibration failed. Recommended actions: 1) Reinsert FMS. 2) If condition persists, replace FMS. 3) If condition persists, restart system. 4) If condition persists, note Advisory number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Cassette calibration failed. Irrigation valve homing failed.	Same as previous entry.	<ul style="list-style-type: none"> Check Irrigation motor/cable connection and replace if necessary. Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
182	Advisory	FMS calibration failed. Recommended actions: 1) Reinsert FMS. 2) If condition persists, replace FMS. 3) If condition persists, restart system. 4) If condition persists, note Advisory number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Cassette calibration failed. Vent valve homing failed.	Same as previous entry.	<ul style="list-style-type: none"> Check Vent valve/cable connection and replace if necessary. Replace Fluidic Module assembly and reload OPS software if necessary. Replace Fluidic PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
183	Advisory (Active Sentry only)	<p>Calibration failed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Place handpiece in a stationary position. 2) Press 'Retry'. 3) If condition persists, reinsert (with tubing disconnected) or replace handpiece. 4) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Unstable handpiece pressure sensor reading or HPS Zero Reference failure during handpiece test.</p> <p>Note: This advisory is displayed only when tuning a Centurion Active Sentry handpiece.</p>	<p>1) A "Retry" Button is provided in the advisory dialog.</p> <p>2) The advisory is automatically dismissed if the handpiece is removed.</p>	<ul style="list-style-type: none"> • Replace Active Sentry HP. • Check and replace U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
184	Advisory (Active Sentry only)	<p>Handpiece pressure sensor failed. Active Sentry features have been disabled (Auto PEL & Active Surge Mitigation and IOP Compensation for Leakage).</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Remove handpiece from eye. 2) Press 'Return to Setup Screen'. 3) Replace handpiece. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle. 2) Press 'Continue without Active Sentry'. 3) Update settings as necessary. 4) Proceed with surgery. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Handpiece pressure sensor failed while calibrated.</p> <p>Note: This advisory is displayed only in the Setup Screen and Phaco steps with Active Sentry mode enabled. When displayed in the Setup Screen the "Return To Setup Screen" button is equivalent to the "X" button.</p> <p>Note: This Advisory is displayed only if Active Sentry Capable Hardware is present and the Active Sentry Availability System Setting is ON.</p> <p>Note: This advisory is always generated on handpiece removal during fluidics use (i.e. when footswitch treadle is engaged)", because handpiece removal results in loss of the handpiece pressure sensor, but handpiece presence isn't monitored while the treadle is depressed.</p>	<p>1) Active Sentry features and phaco power are disabled.</p> <p>2) A "Return to Setup Screen" Button and a "Continue without Active Sentry" button are provided in the advisory dialog.</p> <p>3) The advisory is automatically dismissed if the handpiece is removed and the footswitch treadle has been released to FP0.</p> <p>4) If the advisory has been dismissed with the "Return to Setup Screen" button or the "X" button, and the handpiece hasn't been removed, (a) phaco power remains disabled and (b) the advisory is redisplayed if the footswitch treadle is depressed from FP0 in a phaco step.</p> <p>5) If the advisory has been dismissed with the "Continue without Active Sentry" button, phaco power remains disabled until the footswitch treadle has been released to FP0 and then depressed again, and Active Sentry features remain disabled until the handpiece is removed.</p>	<ul style="list-style-type: none"> • Replace Active Sentry handpiece. • Check and replace U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
185	Advisory (Active Sentry only)	<p>Calibration failed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Place handpiece in a stationary position. 2) Press 'Retry'. 3) If condition persists, replace handpiece. 4) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Unstable HPS reading while applying Phaco during handpiece test.	<ol style="list-style-type: none"> 1) A "Retry" Button is provided in the advisory dialog. 2) The advisory is automatically dismissed if the handpiece is removed. 	<ul style="list-style-type: none"> • Replace Active Sentry handpiece. • Check and replace U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
186	Advisory (Active Sentry only)	<p>Handpiece pressure sensor failed (middle connector port). Active Sentry features will be disabled (Auto PEL & Active Surge Mitigation and IOP Compensation for Leakage).</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Replace handpiece. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Press 'Continue without Active Sentry'. 2) Review settings prior to proceeding with surgery (adjust Fluidics surgical parameters as appropriate). <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Handpiece pressure sensor failed (middle port).</p> <p>Note: This advisory is displayed only in the Setup screen.</p> <p>Note: This Advisory is displayed only if Active Sentry Capable Hardware is present and the Active Sentry Availability System setting is ON.</p>	<ol style="list-style-type: none"> 1) A "Continue without Active Sentry" button is provided in the advisory dialog. 2) If the advisory is displayed before tuning and is dismissed with the "Continue without Active Sentry" button, then subsequent tunes are performed for the Centurion OZil Handpiece, and Active Sentry features remain disabled until the handpiece is removed. 3) If the advisory is displayed during tuning then tuning fails. 4) If the advisory is displayed during tuning and is dismissed with the "Continue without Active Sentry" button, then the tune is automatically restarted as a Centurion OZil handpiece tune, and Active Sentry features remain disabled until the handpiece is removed. 5) The advisory is automatically dismissed if the handpiece is removed. 	<ul style="list-style-type: none"> • Replace Active Sentry HP. • Check and replace middle U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
187	Advisory (Active Sentry only)	<p>Handpiece pressure sensor failed (top connector port). Active Sentry features will be disabled (Auto PEL & Active Surge Mitigation and IOP Compensation for Leakage).</p> <p>Recommended actions: 1) Replace handpiece.</p> <p>Alternate actions: 1) Press 'Continue without Active Sentry'. 2) Review settings prior to proceeding with surgery (adjust Fluidics surgical parameters as appropriate).</p> <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Handpiece pressure sensor failed (top port).</p> <p>Note: This advisory is displayed only in the Setup screen.</p> <p>Note: This Advisory is displayed only if Active Sentry capable hardware is present and the Active Sentry Availability system setting is ON.</p>	Same as above.	<ul style="list-style-type: none"> • Replace Active Sentry handpiece. • Check and replace top U/S handpiece cable assembly if necessary. • Replace U/S Controller PCB & reload U/S software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
188	Advisory	<p>Unable to achieve irrigation pressure.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Check for extended irrigation. Release footswitch treadle then depress again to dismiss Advisory dialog. 2) Check administration and irrigation lines and luer fitting. 3) If condition persists, reinsert or replace FMS. 4) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Unable to achieve IOP.</p> <p>Note: This Advisory can occur in any step, even those without IOP controls. This Advisory occurs only in FP0 or FP1.</p>	<p>The advisory is automatically dismissed if the footswitch treadle transitions out of FP0.</p>	<ul style="list-style-type: none"> • Replace Fluidic Module assembly and reload OPS software if necessary. • Replace Fluidics PCB assembly & reload Fluidic software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration). • Replace Active Irrigation assembly and perform BPS Calibration Data.
190	Advisory	<p>Active Fluidics is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Remove FMS. 2) Use Gravity Fluidics. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>BPS failed.</p> <p>Note: This Advisory is displayed at startup and then subsequently every time AI FMS insertion is attempted. One of possible conditions for this advisory is failure to perform the Zero Calibrate BPS operation (BPS Calibration Data).</p>	<p>When this advisory is displayed on insertion of an AI FMS, the FMS is rejected.</p>	<ul style="list-style-type: none"> • Perform BPS Calibration Data. • Replace BPS Cable Assy (W150) and perform BPS Calibration Data.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
191	Advisory	<p>Active Fluidics is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Remove FMS. 2) Use Gravity Fluidics. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Bag ID failed.	<p>System goes to Not Primed status.</p> <p>After the user dismisses the advisory it is redisplayed if the condition still exists and the footswitch treadle is depressed from FP0 while an AI FMS is inserted in Phaco, I/A, Vitrectomy, Fill, and Irrigation Footswitch Steps, and in the AutoSert step only if the AutoSert IOP doctor setting is On.</p>	<ul style="list-style-type: none"> • Check W186 cable from Upper Backplane PCB (J10) to Active Irrigation PCB (J7) and replace if necessary. • Replace Bag ID Reader Assembly.
199	Advisory (2.04 only)	<p>Gravity Fluidics is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Use Active Fluidics. 	<ol style="list-style-type: none"> 1) This Advisory code has been deprecated. It was used in REL_2.04 for what is now Advisory 499 in REL_3.0. 	The FMS is ejected.	

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
ULTRASONICS MECHANISM – 2XX					
201	Warning	<p>Ultrasound not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	<p>1) Phaco handpieces go to Not Tested status.</p> <p>2) Test Handpiece button in Setup screen is ghosted if selected handpiece is a phaco handpiece.</p>	<ul style="list-style-type: none"> • Check W101 cable from MFIO (J1) to Upper Backplane PCB (J4). This is the 24VDC supplied to the US Controller and Fluidics PCBs. • Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3). • Check Blind Mate connection from Upper BackPlane PCB to US Controller PCB. • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
203	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
205	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
206	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
226	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
227	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
228	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
229	Warning	Same as previous entry.	Footswitch mechanism fault.	Same as previous entry.	Same as previous entry.
230	Warning	Same as previous entry.	Footswitch mechanism timeout.	Same as previous entry.	Same as previous entry.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
231	Warning	Same as previous entry.	Footswitch mechanism range error.	Same as previous entry.	Same as previous entry.
232	Warning	Same as previous entry.	Fluidics mechanism fault.	Same as previous entry.	Same as previous entry.
233	Warning	Same as previous entry.	Fluidics mechanism timeout.	Same as previous entry.	Same as previous entry.
234	Warning	Same as previous entry.	Fluidics mechanism range error.	Same as previous entry.	Same as previous entry.
244	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
245	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
246	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
249	Warning	Same as previous entry.	Generator subsystem fault.	Same as previous entry.	Same as previous entry.
250	Advisory	<p>Testing in air.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Fill test chamber completely. 2) Re-test handpiece. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Connect handpiece to other port and re-test. 2) If condition persists, replace handpiece. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Tune failed - tuning in air.	1) Phaco handpiece status is set to Not Tested.	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
254	Advisory	<p>Loose tip.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Tighten or replace tip. 2) Re-test handpiece. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Connect handpiece to other port. 2) Re-test handpiece. <p>If condition persists, replace handpiece.</p>	Tune failed – loose tip.	Same as previous entry.	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.
255	Advisory	Same as previous entry.	Loose tip.	Application of phaco power is halted in FP3, but user can re-apply phaco power by exiting FP3 and then re-entering FP3.	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.
256	Advisory	<p>Handpiece test failed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Remove and reconnect handpiece. 2) If condition persists, try other port. 3) If condition persists, replace handpiece. 4) If condition persists and in surgery, stabilize the eye then restart system. 5) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Tune failed – handpiece current low (open circuit).	1) Phaco handpiece status is set to Not Tested.	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
257	Advisory	Same as previous entry.	Tune failed – handpiece voltage low (short circuit).	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
258	Advisory	Same as previous entry.	Tune failed – frequency order.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
260	Advisory	Same as previous entry.	Tune failed – series frequency margin.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
261	Advisory	Same as previous entry.	Tune failed – parallel frequency margin.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
263	Advisory	Same as previous entry.	Tune failed – bandwidth low.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
264	Advisory	Same as previous entry.	Tune failed – bandwidth high.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
266	Advisory	Same as previous entry.	Tune failed – boost supply voltage.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
268	Advisory	Handpiece test failed. Recommended actions: 1) Press 'Return to Setup Screen'. Re-test handpiece.	Tune failed - step type (tune command received outside of Setup).	1) Phaco handpiece status is set to Not Tested. 2) A "Return to Setup Screen" Button is provided in the advisory dialog.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
269	Advisory	Handpiece test failed. Recommended actions: Re-test handpiece.	Tune failed – power not ready.	1) Phaco handpiece status is set to Not Tested.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
270	Advisory	Handpiece fault detected. Recommended actions: 1) Connect handpiece to other port. 2) Re-test handpiece. 3) If condition persists, replace handpiece. 4) If condition persists and in surgery, stabilize the eye then restart system. 5) If condition persists after restart, note Advisory number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	U/S HP failure - corrupt handpiece (bad CRC). Note: 29: Bottom Port 30: Middle Port 31: Top Port	None	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
272	Advisory	Same as previous entry.	U/S HP failure - handpiece current low (open circuit).	Application of phaco power is halted in FP3, but user can re-apply phaco power by exiting FP3 and then re-entering FP3.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
273	Advisory	Same as previous entry.	U/S HP failure - handpiece voltage low (short circuit).	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
274	Advisory	<p>Ultrasound error.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle and retry. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	U/S HP failure - excessive power.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.
276	Advisory	<p>Step changed while applying U/S power.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle. 2) Switch handpiece or tip if necessary. 	Unexpected handpiece selection (due to step transition between Phaco and UltraChop).	Application of phaco power is halted in FP3. User can apply phaco power to the other handpiece by returning to FP0 and then re-entering FP3.	
277	Advisory	<p>Handpiece disconnected while applying U/S power.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle. <p>Insert and test handpiece.</p>	U/S handpiece disconnected while footswitch engaged.	Phaco handpieces go to Not Tested status.	<ul style="list-style-type: none"> Check and replace Handpiece cable connector if necessary. Replace US Controller PCB and reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
278	Advisory	<p>Handpiece fault detected.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Connect handpiece to other port. 2) Re-test handpiece. 3) If condition persists, replace handpiece. 4) If condition persists and in surgery, stabilize the eye then restart system. 5) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	U/S HP failure - corrupt handpiece (bad data).	Same as previous entry.	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
279	Advisory	<p>Unknown handpiece detected.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Remove and inspect cable connector for debris. 2) Verify handpiece compatibility. 3) If condition persists, connect to other port. 4) If condition persists, replace handpiece. 5) If condition persists and in surgery, stabilize the eye then restart system. 6) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Unknown handpiece.	<ol style="list-style-type: none"> 1) Handpiece status goes to "Unknown". 2) This advisory is automatically dismissed if the handpiece is removed. 	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.
280	Advisory	Same as previous entry.	Unsupported handpiece.	<ol style="list-style-type: none"> 1) Handpiece status goes to "Unknown". 2) This advisory is automatically dismissed if the handpiece is removed. 	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
290	Advisory	<p>Ultrasound error.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle and retry. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Boost supply out of range.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>Application of phaco power is halted in FP3, but user can re-apply phaco power by exiting FP3 and then re-entering FP3.</p>	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.
291	Advisory	<p>Ultrasound error.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle, wait 10 seconds, then retry. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>FET temperature out of range.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>Application of phaco power is halted in FP3, but user can re-apply phaco power by exiting FP3, waiting about 10 seconds, and then re-entering FP3.</p>	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.
292	Advisory	N/A	<p>Fan speed out of range.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>The event is saved in the Event Log but the advisory is not displayed to the user.</p>	<ul style="list-style-type: none"> • Check and replace M1 Fan assembly on the US Controller PCB. • Replace US Controller PCB and reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
293	Advisory	<p>Ultrasound error.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle and retry. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Power good, not ready.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>Application of phaco power is halted in FP3, but user can re-apply phaco power by exiting FP3 and then re-entering FP3.</p>	<ul style="list-style-type: none"> • Check and replace Handpiece cable connector if necessary. • Replace US Controller PCB and reload Generator Software/logicware if necessary.
FOOTSWITCH MECHANISM – 3XX					
301	Warning	<p>Surgical functionality not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	<ol style="list-style-type: none"> 1) All footswitch functionality is disabled. 2) Prime, Fill, and Test Handpiece buttons are disabled. If a button is pressed, the subsystem status dialog is displayed. 3) System goes to Not Primed status. 4) System goes to Not Tuned status. 5) Footswitch Status displays position 0. 	<ul style="list-style-type: none"> • Check blind mate connection between Host and MFIO. • Replace MFIO PCB and reload the Software/logicware if necessary. • Replace Host Module.
303	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Check blind mate connection between Host and MFIO. • Replace MFIO PCB and reload the Software/logicware if necessary. • Replace Host Module.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
305	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> Check blind mate connection between Host and MFIO. Replace MFIO PCB and reload the Software/logicware if necessary. Replace Host Module.
306	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> Check blind mate connection between Host and MFIO. Replace MFIO PCB and reload the Software/logicware if necessary. Replace Host Module.
307	Warning	Same as previous entry.	Voltage failure.	Same as previous entry.	<ul style="list-style-type: none"> Check blind mate connection between Host and MFIO. Replace MFIO PCB and reload the Software/logicware if necessary. Replace Host Module.
326	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
327	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
328	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
344	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
345	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
346	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
349	Warning	Same as previous entry.	Multifunction subsystem fault.	Same as previous entry.	Same as previous entry.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
350	Advisory	<p>Footswitch failure detected.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Inspect footswitch, clean under rear section of treadle and remove debris if present. (Reference Maintenance section of Operator's Manual.) 2) Inspect and reconnect footswitch connector. 3) Ensure treadle is not depressed then reset footswitch. 4) If condition persists, replace footswitch. 5) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Up-switch failure.</p> <p>Note: This advisory most often occurs as a result of user error, and resetting the footswitch will solve the problem. If there is a true hardware failure the advisory will appear again after the reset, and the footswitch must be removed.</p> <p>Note: This advisory is generated only for the Laureate, Infiniti, and Constellation Footswitches.</p>	<p>The footswitch is reset and the Advisory is dismissed when the user presses the "Reset Footswitch" Button.</p> <p>The Advisory is automatically dismissed if the footswitch is disconnected.</p>	<ul style="list-style-type: none"> • Replace footswitch. • Check and replace the footswitch connector cable at the system console.
351	Advisory	<p>Footswitch failure detected.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Inspect and reset footswitch. 2) If condition persists, replace footswitch. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Encoder failure.</p> <p>Note: This advisory most often occurs as a result of user error, and resetting the footswitch will solve the problem. If there is a true hardware failure the advisory will appear again after the reset, and the footswitch must be removed.</p> <p>Note: This advisory is generated only for the Laureate and Constellation Footswitches.</p>	<p>The footswitch is reset and the Advisory is dismissed when the user presses the "Reset Footswitch" Button.</p> <p>The Advisory is automatically dismissed if the footswitch is disconnected.</p>	<ul style="list-style-type: none"> • Replace footswitch. • Check and replace the footswitch connector cable at the system console.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
352	Advisory	<p>Footswitch failure.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Inspect and reconnect footswitch connector. 2) If condition persists, replace footswitch. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Detent failure.</p> <p>Note: This advisory is generated only for the Laureate and Constellation Footswitches.</p>	<p>Footswitch Status displays position 0. If the Footswitch Button is pressed while the footswitch is still connected, the advisory message is redisplayed and the advisory tone is emitted.</p> <p>The Advisory is automatically dismissed if the footswitch is disconnected.</p>	<ul style="list-style-type: none"> • Replace footswitch. • Check and replace the footswitch connector cable at the system console.
358	Advisory	<p>Footswitch charging while cradled is unavailable.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Cable the footswitch if charging is desired. 2) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Footswitch charger proximity sensor error.</p>	<p>This advisory is suppressed while in the Surgery Screen and any time an FMS is inserted. (This avoids a nuisance advisory during surgery.)</p>	<ul style="list-style-type: none"> • Check cable connections (W147) between Contactless Charger PCB and MFIO PCB. • Replace Footswitch Contactless Charger PCB. • Replace MFIO PCB.
359	Advisory	<p>Same as previous entry.</p>	<p>Footswitch charger voltage out of range.</p>	<p>Same as previous entry.</p>	<ul style="list-style-type: none"> • Replace Footswitch Contactless Charger PCB.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
360	Advisory	<p>Footswitch battery is low.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Cradle the footswitch after surgical cases have been completed. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Centurion Footswitch battery low.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>1) This advisory is displayed only if the condition exists when communication with a wireless footswitch is initiated.</p> <p>2) This advisory is not re-displayed unless footswitch pairing occurs.</p> <p>3) This advisory is suppressed while a non-Centurion Footswitch is connected.</p> <p>4) This advisory is suppressed while the Centurion Footswitch is cabled.</p>	<ul style="list-style-type: none"> • Replace Footswitch battery.
361	Advisory	<p>Footswitch battery is critically low. Footswitch functionality may be lost unexpectedly.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Connect footswitch cable to console. 2) Cradle the footswitch after surgical cases have been completed. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Centurion Footswitch battery critically low.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>1) This advisory is not re-displayed unless footswitch pairing occurs.</p> <p>2) This advisory is suppressed while a non-Centurion Footswitch is connected.</p> <p>3) This advisory is suppressed while the Centurion Footswitch is cabled.</p>	<ul style="list-style-type: none"> • Replace Footswitch battery.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
362	Advisory	<p>Footswitch version not supported.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Replace footswitch. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Incompatible software version.</p> <p>Note: this Advisory is generated when a footswitch is cabled or cradled.</p>	<p>Footswitch status indicates footswitch not connected.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> • Reload Footswitch software. • Replace Footswitch Controller/Processor PCB and reload software. • Replace Footswitch.
363	Advisory	<p>Footswitch communication lost.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle. 2) If footswitch is wireless, move footswitch and console closer, or eliminate obstruction. 3) If footswitch is cabled, replace cable. <p>If condition persists, replace footswitch.</p>	<p>Communication timeout (console not hearing from footswitch).</p> <p>Changing the Footswitch Channel may solve this problem.</p>	<p>1) Footswitch status indicates footswitch not connected.</p> <p>2) If communication is subsequently reestablished, the Footswitch Mechanism waits until the treadle is returned to FP0 or FP1 before broadcasting a resumption of communication and transmitting footswitch input.</p> <p>3) If communication resumes while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> • Change footswitch channel and perform footswitch pairing. • Check antenna connections at the FTSW Modem. • Check antenna connection at the FTSW.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
364	Advisory	Footswitch failure detected. Recommended actions: 1) Release footswitch treadle. If condition persists, replace footswitch.	Encoder failure.	1) Footswitch status indicates footswitch not connected. (Because footswitch automatically resets.) 2) If footswitch status returns to connected while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds. This advisory is suppressed while a non-Centurion Footswitch is connected.	<ul style="list-style-type: none"> Replace encoder. Replace Footswitch.
365	Advisory	Same as previous entry.	Broken spring.	Same as previous entry.	<ul style="list-style-type: none"> Replace spring. Replace Footswitch.
366	Advisory	Footswitch detent failure detected. Detent vibration will not be provided. Recommended actions: 1) Release footswitch treadle. 2) Proceed with surgery. If condition persists after restart, replace footswitch.	Centurion Footswitch detent motor failure. (Footswitch continues to operate.) Note: This Advisory is generated by the Host based on real-time status.	This advisory is suppressed while a non-Centurion Footswitch is connected.	<ul style="list-style-type: none"> Replace Footswitch.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
367	Advisory	<p>Footswitch failure detected.</p> <p>Recommended actions: 1) Release footswitch treadle. If condition persists, replace footswitch.</p>	Accelerometer failure.	<p>1) Footswitch status indicates footswitch not connected. (Because footswitch automatically resets.) 2) If footswitch status returns to connected while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Replace Footswitch Controller/ Processor PCB and reload software. Replace Footswitch.
368	Advisory	Same as previous entry.	Software error.	Same as previous entry.	<ul style="list-style-type: none"> Reload footswitch software.
369	Advisory	<p>Footswitch wireless operation unavailable.</p> <p>Recommended actions: 1) Do not disconnect footswitch cable. If condition persists, replace footswitch.</p>	<p>Centurion Footswitch modem failure.</p> <p>(Footswitch continues to operate.)</p> <p>Note: This Advisory is generated by the Host based on real-time status. It can occur only while the footswitch is cabled.</p>	<p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Replace Footswitch Controller/ Processor PCB and reload software. Replace Footswitch.
370	Advisory	<p>Footswitch failure detected.</p> <p>Recommended actions: 1) Release footswitch treadle. If condition persists, replace footswitch.</p>	<p>Treadle homing failure.</p> <p>(Footswitch continues to operate but treadle and buttons are forced to the disengaged state.)</p>	<p>If the condition clears while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion footswitch is connected.</p>	<ul style="list-style-type: none"> Check for any obstruction that does not allow footswitch treadle to be returned to a full released position. Check and tighten Pedal Shaft screws that secure Pedal Cam/arm to Pedal Shaft (<i>see Beacon article Aug 2017</i>). Check and replace FTSW Domed Up-Switch PCB if necessary. Replace Footswitch.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
371	Advisory	<p>Footswitch failure detected.</p> <p>Recommended actions: 1) Release footswitch treadle.</p> <p>If condition persists, replace footswitch.</p>	Watchdog timeout.	<p>1) Footswitch status indicates footswitch not connected. (Because footswitch automatically resets.) 2) If footswitch status returns to connected while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Replace Footswitch.
372	Advisory	<p>Footswitch failure detected.</p> <p>Recommended actions: 1) Release footswitch treadle and buttons. 2) Place footswitch in horizontal position.</p> <p>If condition persists, replace footswitch.</p>	<p>Centurion Footswitch up-switch failure.</p> <p>(Footswitch continues to operate but treadle and buttons are forced to the disengaged state.)</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Check for any obstruction that does not allow footswitch treadle to be returned to a full released position. Check and tighten Pedal Shaft screws that secures Pedal Cam/arm to Pedal Shaft (<i>see Beacon article Aug 2017</i>). Check and replace FTSW Domed Up-Switch PCB if necessary. Replace Footswitch.
373	Advisory	Same as previous entry.	<p>Centurion Footswitch left vertical switch failure.</p> <p>(Footswitch continues to operate but treadle and buttons are forced to the disengaged state.)</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>If the condition clears while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Replace Footswitch left vertical switch.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
374	Advisory	Same as previous entry.	<p>Centurion Footswitch left horizontal switch failure.</p> <p>(Footswitch continues to operate but treadle and buttons are forced to the disengaged state.)</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	Same as previous entry.	<ul style="list-style-type: none"> Replace Footswitch left horizontal switch.
375	Advisory	Same as previous entry.	<p>Centurion Footswitch right vertical switch failure.</p> <p>(Footswitch continues to operate but treadle and buttons are forced to the disengaged state.)</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	Same as previous entry.	<ul style="list-style-type: none"> Replace Footswitch right vertical switch.
376	Advisory	Same as previous entry.	<p>Centurion Footswitch right horizontal switch failure.</p> <p>(Footswitch continues to operate but treadle and buttons are forced to the disengaged state.)</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	Same as previous entry.	<ul style="list-style-type: none"> Replace Footswitch right horizontal switch.
377	Advisory	<p>Footswitch failure detected.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle. <p>If condition persists, replace footswitch.</p>	<p>Centurion Footswitch treadle excessive travel.</p> <p>(Footswitch continues to operate but treadle and buttons are forced to the disengaged state.)</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	Same as previous entry.	<ul style="list-style-type: none"> Replace Footswitch.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
378	Advisory	Same as previous entry.	Wireless data out of range (received by footswitch).	<p>1) Footswitch status indicates footswitch not connected. (Because footswitch automatically resets.)</p> <p>2) If footswitch status returns to connected while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Reset footswitch (ship mode) and perform pairing after. Replace Footswitch.
379	Advisory	Same as previous entry.	<p>CAN communication timeout. (Footswitch not hearing from console.)</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	<p>If the condition clears while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Replace Footswitch. Replace MFIO PCB and reload Software/logicware.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
380	Advisory	Same as previous entry.	CAN data out of range (received by footswitch).	<p>1) Footswitch status indicates footswitch not connected. (Because footswitch automatically resets.)</p> <p>2) If footswitch status returns to connected while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Reset footswitch (ship mode) and perform pairing after. Replace Footswitch.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
381	Advisory	<p>Footswitch failure detected.</p> <p>Recommended actions: 1) Connect footswitch cable to console.</p> <p>If condition persists, replace footswitch.</p>	Battery communication error (during wireless operation).	<p>1) Footswitch status indicates footswitch not connected. (Because footswitch automatically resets.)</p> <p>2) If footswitch status returns to connected while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>3) If footswitch is cabled while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> Reset footswitch (ship mode) and perform pairing after. Replace battery. Replace Footswitch.
382	Advisory	Same as previous entry.	Battery failure (during wireless operation).	Same as previous entry.	

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
383	Advisory	<p>Footswitch pairing failed. Wireless operation unavailable.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Remove and re-cradle the footswitch for at least 5 seconds. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Connect footswitch cable to console. 2) If condition persists, replace footswitch. 	Pairing failed (pairing handshake over wireless failed).	<p>If footswitch pairing succeeds while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p> <p>This advisory is suppressed while a non-Centurion Footswitch is connected.</p>	<ul style="list-style-type: none"> • Check console and footswitch antennas. • Replace Footswitch Controller PCB. • Replace Footswitch. • Replace MFIO PCB.
384	Advisory	N/A	<p>Centurion Footswitch recovered from critical error.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	The event is saved in the Event Log but the advisory is not displayed to the user.	
385	Advisory	N/A	<p>Centurion Footswitch recovered from communicator software error.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	The event is saved in the Event Log but the advisory is not displayed to the user.	
386	Advisory	N/A	<p>Centurion Footswitch pairing data corrupt.</p> <p>Note: This Advisory is generated by the Host based on real-time status.</p>	The event is saved in the Event Log but the advisory is not displayed to the user.	<ul style="list-style-type: none"> • Pair the footswitch. • Replace Footswitch Controller PCB. • Replace Footswitch.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
387	Advisory	<p>Footswitch wireless operation unavailable.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, do not disconnect footswitch cable. 2) Between surgical cases, disconnect and reconnect footswitch cable. <p>If condition persists, replace footswitch.</p>	Centurion Footswitch battery communication error (during cabled operation).	This advisory is suppressed while a non-Centurion Footswitch is connected.	<ul style="list-style-type: none"> • Reset footswitch (ship mode) and perform pairing after. • Replace battery. • Replace Footswitch.
388	Advisory	Same as previous entry.	Centurion Footswitch battery failure (during cabled operation).	Same as previous entry.	<ul style="list-style-type: none"> • Reset footswitch (ship mode) and perform pairing after. • Replace battery. • Replace Footswitch.
HOST – 4XX					
400	Fault	<p>System not operational.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Press Standby Switch to shut down system. 2) Restart system. 3) If condition persists, note Fault number and contact Alcon Technical Services. <p>Alcon Technical Services < Contact Info System Setting></p>	POST progress incomplete.	All mechanisms go to safe state.	<ul style="list-style-type: none"> • Replace Host Module and reload appropriate software, include updating date and time, system serial number, and reconfigure Telemetry network for the wireless footswitch and SGS.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
401	Fault	Same as previous entry.	FlexRay error (or other subsystem transport error).	Same as previous entry.	<ul style="list-style-type: none"> Replace FlexRay PCB in Host Module. Replace Host Module and reload appropriate software, include updating date and time, system serial number, and reconfigure Telemetry network for the wireless footswitch and SGS.
403	Fault	Same as previous entry.	Software error: <specific detail identifying the error>	Same as previous entry.	
404	Fault	<p>System not operational.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> Press Standby Switch to shut down system. Restart system. <p>If condition persists, note Fault number and contact Alcon Technical Services.</p>	Corrupt or missing file: <file name>	Same as previous entry.	<ul style="list-style-type: none"> Reload Host software. Replace Host Module and reload appropriate software, include updating date and time, system serial number, and reconfigure Telemetry network for the wireless footswitch and SGS.
405	Fault	<p>System not operational.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> Press Standby Switch to shut down system. Restart system. If condition persists, note Fault number and contact Alcon Technical Services. <p>Alcon Technical Services < Contact Info System Setting></p>	<p>Incompatible software version: <subsystem(s)></p> <p>or</p> <p>Incompatible logicware version: <subsystem(s)></p>	Same as previous entry.	<ul style="list-style-type: none"> Reload subsystem software/logicware.
406	Fault	Same as previous entry.	Incompatible firmware version: BIOS.	Same as previous entry.	<ul style="list-style-type: none"> Reload Host software. Replace Host Module and reload appropriate software, include updating date and time, system serial number, and reconfigure Telemetry network for the wireless footswitch and SGS.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
407	Fault	<p>System not operational.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Press Standby Switch to shut down system. 2) Restart system. <p>If condition persists, note Fault number and contact Alcon Technical Services.</p>	Data partition corruption: <specific detail identifying the error>.	Same as previous entry.	<ul style="list-style-type: none"> • Perform DATA Partition Backup and Reload the Host software with the “Wipe DATA Partition when formatting” check box checked. Data partition corruption could be returned to R&D to see if it can be recovered.
408	Fault	Same as previous entry.	Initialization error: <specific detail identifying the error>.	<p>All mechanisms go to safe state.</p> <p>This event may or may not be recorded in the Event Log, depending on how early in initialization it occurs.</p>	<ul style="list-style-type: none"> • Reload Host software. • Replace Host Module and reload appropriate software, include updating date and time, system serial number, and reconfigure Telemetry network for the wireless footswitch and SGS.
420	Fault	<p>System not operational.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Press Standby Switch to shut down system. 2) Restart system. 3) If condition persists, note Fault number and contact Alcon Technical Services. <p>Alcon Technical Services < Contact Info System Setting></p>	Host Module fan failure.	All mechanisms go to safe state.	<ul style="list-style-type: none"> • Replace fan. • Replace Host Module and reload appropriate software, include updating date and time, system serial number, and reconfigure Telemetry network for the wireless footswitch and SGS.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
431	Warning	AC power lost. Continuing on battery power. Surgical functionality is not available. Recommended actions: Restore AC power as soon as possible to reactivate surgical functionality.	Unexpected loss of A/C Power.	The Warning is automatically dismissed if A/C Power is restored. The Warning is automatically dismissed if Warning 432 occurs. Note: This Warning can't be dismissed by the user.	<ul style="list-style-type: none"> Check AC Power Cord cable/connection. Check PEM and replace if necessary. Check Power Supply blind mate connection at MFIO PCB J13.
432	Warning	Backup power depleted. System will shut down. Recommended actions: 1) If in surgery, stabilize the eye then restore AC power and restart system.	Battery voltage low while operating on battery Power.	The system shuts down. The user can't prevent shutdown by restoring A/C Power. Note: This Warning can't be dismissed by the user.	<ul style="list-style-type: none"> Charging console batteries. Check cable connection from batteries to MFIO PCB. Replace console batteries. Replace MFIO PCB.
433	Warning	Backup power unavailable. System will shut down. Recommended actions: 1) If in surgery, stabilize the eye then restore AC power and restart system.	Battery temperature out of range while operating on battery power.	The Warning is displayed for 20 seconds (± 4) and then the system shuts down. The user can't prevent shutdown by restoring A/C Power. Note: This Warning can't be dismissed by the user.	<ul style="list-style-type: none"> Check and replace battery cable if necessary. Replace batteries.
450	Advisory	Footswitch is depressed. Recommended actions: 1) Release footswitch treadle before pressing Prime FMS, Fill, or Test Handpiece. If condition persists, clear obstruction preventing footswitch release.	Footswitch depressed beyond FP0 when user commands Prime, Fill, or Test Handpiece, or while one of these commands is executing. Note: This advisory is not displayed for Test ICD.	The commanded action (Prime FMS, Fill, or Test Handpiece) is not performed or is canceled.	<ul style="list-style-type: none"> Check footswitch pedal for any obstruction that may not allow the pedal to return to fully released position. Replace Footswitch.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
451	Advisory	<p>Cannot recognize footswitch.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Check footswitch connection and reset footswitch. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Wired footswitch is not supported or the footswitch type is not recognized.	The footswitch is reset and the Advisory is dismissed when the user presses the "Reset Footswitch" Button. . While the footswitch is resetting (about 2-3 seconds) it's considered to be an unknown footswitch.	<ul style="list-style-type: none"> • Replace with a supported footswitch.
452	Advisory	<p>The IOP setting cannot be achieved due to the current PEL setting. The IOP setting will be adjusted to the closest valid setting.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Note current IOP and PEL settings. 2) Update settings as necessary or proceed with current settings. 	IOP setting for the current step is out of range.	IOP setting is changed to the closest valid setting. (This is an unsaved change.)	

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
453	Advisory	<p>The Irrigation Pressure setting cannot be achieved due to the current PEL setting. The Irrigation Pressure setting will be adjusted to the closest valid setting.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Note current Irrigation Pressure and PEL settings. 2) Update settings as necessary or proceed with current settings. 	<p>Irrigation Pressure setting for the current step is out of range.</p> <p>Note: This advisory is displayed only in Passive Irrigation Mode.</p>	<p>Irrigation Pressure setting is changed to the closest valid setting. (This is an unsaved change.)</p>	
460	Advisory	<p>Footswitch not detected.</p> <p>Recommended actions:</p> <p>Install footswitch.</p>	<p>Footswitch not connected after FMS is inserted and successfully calibrated, or cabled footswitch is disconnected while FMS is inserted.</p> <p>Note: This advisory is not generated if Advisory 362, 363, 364, 365, 367, 368, 371, 378, 380, 381, or 382 is signaled simultaneously.</p> <p>Note: This advisory will be generated if the footswitch channel is changed while the footswitch isn't cradled or cabled.</p>	<ol style="list-style-type: none"> 1) All mechanisms assume footswitch position 0. 2) The advisory is redisplayed if the GUI Footswitch Button is pressed while the condition persists, and Advisory 363 is not signaled simultaneously. 3) The advisory is automatically dismissed if a footswitch is connected. 	<ul style="list-style-type: none"> • Install a supported footswitch.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
463	Advisory	<p>The language translation is invalid.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Proceed with surgical cases. 2) Note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	A language translation is corrupted or missing. This advisory occurs only when attempting to select the language in the System Settings Dialog.	The invalid language is not selected.	
464	Advisory	<p>The selected language translation is invalid. English will be used by default.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Proceed with surgical cases. 2) Note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Language translation for the selected language is corrupted or missing. This advisory occurs only at startup.	The language defaults to English, but the System Setting for language is not changed.	
465	Advisory	<p>The test sequence was interrupted by removal of the handpiece.</p> <p>Recommended actions:</p> <p>Install handpiece and re-test.</p>	Phaco handpiece was removed during tune.	Phaco handpiece status is set to Not Tested.	<ul style="list-style-type: none"> • Check and replace handpiece if necessary. • Check and replace handpiece connector cable on the console if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
466	Advisory	A third handpiece has been inserted. This handpiece has been disabled. Recommended actions: Remove any handpiece.	Three Phaco handpieces are inserted. Note: This advisory is displayed only when the footswitch is in FP0.	1) The name of the most recently inserted handpiece is displayed as "Not Used" . 2) The advisory is automatically dismissed if any handpiece is removed.	
468	Advisory	Doctor file unavailable. Recommended actions: 1) Restore doctor file from backup media. 2) If condition persists, note Advisory number and contact Alcon Technical Services. Alternate actions: 1) Select Alcon Settings doctor file. See the About Dialog for Alcon Technical Services contact information.	I/O Error.	The user cannot select this doctor.	<ul style="list-style-type: none"> Delete doctor file from the console and restore doctor file from the backup USB media.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
469	Advisory	<p>Doctor file corrupted.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Restore doctor file from backup media. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Select Alcon Settings doctor file. <p>See the About Dialog for Alcon Technical Services contact information.</p>	CRC verification failed.	The user cannot select this doctor.	<ul style="list-style-type: none"> • Delete doctor file from the console and restore doctor file from the backup USB media.
470	Advisory	<p>Doctor file invalid.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Restore doctor file from backup media. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>Alternate actions:</p> <ol style="list-style-type: none"> 1) Select Alcon Settings doctor file. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Doctor file is incomplete or contains invalid data.	The user cannot select this doctor.	<ul style="list-style-type: none"> • Delete doctor file from the console and restore doctor file from the backup USB media.
472	Advisory	N/A	Abnormal termination of host application detected at startup. (The termination occurred prior to the previous console shutdown.)	The event is saved in the Event Log but the advisory is not displayed to the user.	<ul style="list-style-type: none"> • Replace Host Module and reload appropriate software, include updating date and time, system serial number, and reconfigure Telemetry network for the wireless footswitch and SGS.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
473	Advisory	<p>System service needed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Note Advisory number. 2) Proceed with surgical cases. 3) Contact Alcon Technical Services for system service. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>One of two Host Module fans has failed.</p> <p>Note: this Advisory is displayed only at system startup.</p>	N/A	<ul style="list-style-type: none"> • Replace fan.
475	Advisory	<p>CPU Battery should be replaced.</p> <p>System clock may be incorrect.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Note Advisory number. 2) Update date and time. 3) Proceed with surgical cases. 4) Contact Alcon Technical Services to replace battery. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>CMOS battery depleted, voltage is below 2.2.</p>	<p>This condition is checked only at system startup.</p>	<ul style="list-style-type: none"> • Replace CPU battery.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
477	Advisory	System security has been compromised. Recommended actions: 1) Note Advisory number. 2) Contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Windows write filter is disabled.	This condition is checked only at system startup, and only in release mode builds.	
478	Advisory	System security has been compromised. Recommended actions: 1) Note Advisory number. 2) Contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Keyboard filter has been disabled.	This condition is checked only in release mode builds.	
486	Advisory	The AutoSert setup operation was canceled due to a step change. Recommended actions: 1) Select an I/A or AutoSert step. 2) Continue AutoSert handpiece setup.	N/A	In-progress Load Plunger or Preload Lens operation is canceled.	
490	Advisory	N/A	Video Overlay unavailable due to software error.	The event is saved in the Event Log but the advisory is not displayed to the user.	<ul style="list-style-type: none"> Reload Host software.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
491	Advisory	<p>Wi-Fi network initialization failed. Wireless Video Overlay is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) You may proceed with surgical cases. 2) Optionally, you may restart the system to correct the condition. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Wi-Fi radio configuration failed.</p> <p>Note: This advisory is displayed only at system startup or when the user is configuring the Wi-Fi network in the System Settings Dialog.</p>	<p>If this advisory occurs at startup and the Wi-Fi Network System Setting is OFF, the event is saved in the Event Log but the advisory is not displayed to the user. (This avoids a nuisance advisory.)</p>	<ul style="list-style-type: none"> • Ensure Wi-Fi switch on the Rear Panel I/O PCB is turned ON. • Check connection from Host (J10-B) to Rear Panel I/O PCB (J10). • Check cable connection from MFIO PCB (J14) to Rear Panel I/O PCB (J5).
498	Advisory	<p>The Active FMS is not supported because Active Fluidics is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Insert a Gravity FMS. 	<p>AI Cassette not supported.</p> <p>Note: This advisory is generated upon insertion of an AI FMS when the <i>Active Fluidics Availability</i> system setting is OFF.</p>	<p>The FMS is ejected.</p>	
499	Advisory	<p>The Gravity FMS is not supported because Gravity Fluidics is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Insert an Active FMS. 	<p>GI Cassette not supported.</p> <p>Note: This advisory is generated upon insertion of a GI FMS when the <i>I/V Pole Availability</i> system setting is OFF.</p>	<p>The FMS is ejected.</p>	

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
VIT MECHANISM – 5XX					
501	Warning	<p>Vitrectomy not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	None	<ul style="list-style-type: none"> • Check W101 cable from MFIO (J1) to Upper Backplane PCB (J4). This is the 24VDC supplied to the Fluidics and US Controller PCBs. • Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3). • Check Blind Mate connection from Upper BackPlane PCB to Fluidic PCB. • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly& reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
503	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly& reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
505	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly& reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
506	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly& reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
507	Warning	Same as previous entry.	Valve control failure.	Same as previous entry.	<ul style="list-style-type: none"> • Replace Fluidics PCB assembly& reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
508	Warning	Same as previous entry.	Front manifold pressure sensor failure.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace W133 cable assembly. Replace Fluidics PCB assembly& reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
526	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
527	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
528	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
529	Warning	Same as previous entry.	Footswitch mechanism fault.	Same as previous entry.	Same as previous entry.
530	Warning	Same as previous entry.	Footswitch mechanism timeout.	Same as previous entry.	Same as previous entry.
531	Warning	Same as previous entry.	Footswitch mechanism range error.	Same as previous entry.	Same as previous entry.
532	Warning	Same as previous entry.	Fluidics mechanism fault.	Same as previous entry.	Same as previous entry.
533	Warning	Same as previous entry.	Fluidics mechanism timeout.	Same as previous entry.	Same as previous entry.
534	Warning	Same as previous entry.	Fluidics mechanism range error.	Same as previous entry.	Same as previous entry.
541	Warning	Same as previous entry.	Pump mechanism fault.	Same as previous entry.	Same as previous entry.
542	Warning	Same as previous entry.	Pump mechanism timeout.	Same as previous entry.	Same as previous entry.
543	Warning	Same as previous entry.	Pump mechanism range error.	Same as previous entry.	Same as previous entry.
544	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
545	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
546	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
549	Warning	Same as previous entry.	IA subsystem fault.	Same as previous entry.	Same as previous entry.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
550	Advisory	<p>Vitrectomy high-speed cutting is compromised.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Proceed with lower cut rate 2000 cpm or below, or replace vitrector. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Vitrector low pressure while cutting.	Vitrectomy cutting is disabled until footswitch treadle is released to a range 1 and then back to range 2.	<ul style="list-style-type: none"> • Check pressure tubing from Pneumatic Main Manifold to Vit valve drive. • Replace Fluidics Front Panel assembly with Fluidics PCB and reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
551	Advisory	<p>Vitrectomy cutting is disabled.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Check vitrectomy connection. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Vitrector differential pressure error.</p> <p>Note: This Advisory is generated only when the cut rate is set to the maximum supported value (4000 cpm).</p> <p>Note: This advisory will also be displayed for failed CRC verification of Vitrectomy calibration data..</p>	Vitrectomy cutting is disabled until footswitch treadle is released to range 1 and then back to range 2.	<ul style="list-style-type: none"> • If EC551 occurred during system startup. Perform Vit Calibration. • Check Pneumatics pressure tubing connections (yellow and blue tubings) from the Pneumatics Main Manifold to the Pneumatics Front Manifold. • Replace Fluidics Front Panel assembly with Fluidics PCB and reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
552	Advisory	<p>Vitrectomy cutting is unavailable.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle. 2) Check vitrectomy connection. 3) If condition persists and in surgery, stabilize the eye then restart system. 4) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Probe connection error.	Vitrectomy cutting and aspiration are disabled until footswitch is released to FP0 and then depressed again.	<ul style="list-style-type: none"> • Check Vitrectomy Probe connection and replace Vitrectomy probe if necessary. • Check Pneumatics pressure tubing connections (yellow and blue tubings) from Pneumatics Manifold Module to Pneumatics Front Manifold.
COAG MECHANISM – 6XX					
601	Warning	<p>Coagulation is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	None	<ul style="list-style-type: none"> • Check W101 cable from MFIO (J1) to Upper Backplane PCB (J4). This is the 24VDC supplied to the Fluidics and US Controller PCBs. • Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3). • Check Blind Mate connection from Upper BackPlane PCB to Fluidic PCB. • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
603	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> Reload Fluidic Software/logicware. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
605	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload Fluidic Software/logicware. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
606	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload Fluidic Software/logicware. Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
607	Warning	Same as previous entry.	Power control failure.	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
626	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
627	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
628	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
629	Warning	Same as previous entry.	Footswitch mechanism fault.	Same as previous entry.	Same as previous entry.
630	Warning	Same as previous entry.	Footswitch mechanism timeout.	Same as previous entry.	Same as previous entry.
631	Warning	Same as previous entry.	Footswitch mechanism range error.	Same as previous entry.	Same as previous entry.
635	Warning	Same as previous entry.	Tone mechanism fault.	Same as previous entry.	Same as previous entry.
636	Warning	Same as previous entry.	Tone mechanism timeout.	Same as previous entry.	Same as previous entry.
637	Warning	Same as previous entry.	Tone mechanism range error.	Same as previous entry.	Same as previous entry.
644	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
645	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
646	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
649	Warning	Same as previous entry.	IA subsystem fault.	Same as previous entry.	Same as previous entry.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
650	Advisory	<p>Coagulation is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If condition persists and in surgery, stabilize the eye then restart system. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Coag handpiece failure – excessive power.	None	<ul style="list-style-type: none"> • Replace Coag handpiece. • Replace Fluidics PCB assembly& reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
IV POLE MECHANISM – 7XX					
701	Warning	<p>IV Pole not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	None	<ul style="list-style-type: none"> • Check connections at MFIO (J23 and J5). • Replace IV Pole assembly. • Replace MFIO PCB and reload software/logicware if necessary.
703	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload MFIO Software/logicware. • Replace MFIO PCB & reload MFIO PCB software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
705	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	Same as previous entry.
706	Warning	Same as previous entry.	Command range error.	Same as previous entry.	Same as previous entry.
707	Warning	Same as previous entry.	Stop check failure.	Same as previous entry.	<ul style="list-style-type: none"> Replace IV Pole assembly. Replace MFIO PCB & reload MFIO PCB software/logicware.
708	Warning	Same as previous entry.	Encoder failure.	Same as previous entry.	<ul style="list-style-type: none"> Replace IV Pole assembly. Replace MFIO PCB assembly & reload MFIO PCB software/logicware.
709	Warning	Same as previous entry.	Home Sensor failure.	Same as previous entry.	<ul style="list-style-type: none"> Replace IV Pole assembly. Replace MFIO PCB assembly & reload MFIO PCB software/logicware.
710	Warning	Same as previous entry.	Drive Train failure. Encoder mismatch. Motor turns but the pulleys do not.	Same as previous entry.	<ul style="list-style-type: none"> Check and replace Dual Sensor bracket. Replace IV Pole assembly. Replace MFIO PCB & reload MFIO PCB software/logicware.
711	Warning	Same as previous entry.	Calibration failure.	Same as previous entry.	<ul style="list-style-type: none"> Replace IV Pole assembly. Replace MFIO PCB & reload MFIO PCB software/logicware.
726	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
727	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
728	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
744	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
745	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
746	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
749	Warning	Same as previous entry.	Multifunction subsystem fault.	Same as previous entry.	Same as previous entry.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
750	Advisory	<p>IV Pole jammed. Pole may not have achieved desired height.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Check for external obstacles. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Pole impeded.	None	<ul style="list-style-type: none"> • Check and replace IV Pole assembly if necessary.
IOL MECHANISM – 8XX					
801	Warning	<p>AutoSert not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	None.	<ul style="list-style-type: none"> • Check W101 cable from MFIO (J1) to Upper Backplane PCB (J4). This is the 24VDC supplied to the Fluidics and US Controller PCBs. • Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3). • Replace US Controller PCB with US Front Panel and reload Generator software/logicware.
803	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Generator software/logicware. • Replace US Controller PCB with US Front Panel and reload Generator software/logicware.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
805	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload Generator software/logicware. Replace US Controller PCB with US Front Panel and reload Generator software/logicware.
806	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload Generator software/logicware. Replace US Controller PCB with US Front Panel and reload Generator software/logicware.
826	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
827	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
828	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
829	Warning	Same as previous entry.	Footswitch mechanism fault.	Same as previous entry.	Same as previous entry.
830	Warning	Same as previous entry.	Footswitch mechanism timeout.	Same as previous entry.	Same as previous entry.
831	Warning	Same as previous entry.	Footswitch mechanism range error.	Same as previous entry.	Same as previous entry.
835	Warning	Same as previous entry.	Tone mechanism fault.	Same as previous entry.	Same as previous entry.
836	Warning	Same as previous entry.	Tone mechanism timeout.	Same as previous entry.	Same as previous entry.
837	Warning	Same as previous entry.	Tone mechanism range error.	Same as previous entry.	Same as previous entry.
844	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
845	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
846	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
849	Warning	Same as previous entry.	Generator subsystem fault.	Same as previous entry.	<ul style="list-style-type: none"> Replace US Controller PCB with US Front Panel and reload Generator software/logicware.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
860	Advisory	Two AutoSert Handpieces detected. Recommended actions: Remove one AutoSert Handpiece and proceed.	Multiple handpieces connected. Note: This advisory is generated only while the footswitch is in treadle range 0.	1) AutoSert functions are disabled. 2) After the user dismisses the advisory it is redisplayed if the condition still exists and the AutoSert Step is selected. 3) This advisory is automatically dismissed if an AutoSert handpiece is removed. Note: If the footswitch is beyond treadle range 0 when this condition occurs both handpieces may be driven simultaneously.	<ul style="list-style-type: none"> Replace US Controller PCB with US Front Panel and reload Generator software/logicware.
861	Advisory	AutoSert Handpiece is not supported in the top port. Recommended actions: 1) Move AutoSert Handpiece to the middle port.	Port not supported. Note: This advisory is displayed only if the Active Sentry capable Generator board is present. (This message should only display on Silver and Active Sentry systems.)	This advisory is automatically dismissed if the AutoSert Handpiece in the top port is removed.	<ul style="list-style-type: none"> Verify proper installed U/S Controller PCB.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
889	Advisory	<p>Handpiece fault detected.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Replace AutoSert handpiece. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>AutoSert HP failure – corrupt handpiece (bad CRC)</p> <p>Note: 30: Middle Port 31: Top Port</p>	<ol style="list-style-type: none"> 1) AutoSert functions are disabled. 2) Red handpiece icon displayed. 3) Handpiece status displays “Unknown”. 	<ul style="list-style-type: none"> • Replace AutoSert handpiece. • Replace US Controller PCB with US Front Panel and reload Generator software/logicware.
890	Advisory	<p>AutoSert error occurred.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle and retry. 2) If condition persists, replace AutoSert handpiece. 3) If condition persists and in surgery, stabilize the eye then restart system. 4) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>AutoSert HP failure – motor not moving (move check timeout)</p>	<p>Current AutoSert function in FP2 is terminated. User can retry by exiting and re-entering FP2.</p>	<ul style="list-style-type: none"> • Replace AutoSert handpiece. • Replace US Controller PCB with US Front Panel and reload Generator software/logicware.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
891	Advisory	<p>AutoSert handpiece impeded.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Release footswitch treadle and retry. 2) If condition persists, replace AutoSert handpiece. 3) If condition persists and in surgery, stabilize the eye then restart system. 4) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	AutoSert HP failure – speed out of range	Same as previous entry.	<ul style="list-style-type: none"> • Replace AutoSert handpiece. • Replace US Controller PCB with US Front Panel and reload Generator software/logicware.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
892	Advisory	<p>Handpiece fault detected.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Reinsert handpiece cable connector. 2) If condition persists, replace AutoSert Handpiece. 3) If condition persists and in surgery, stabilize the eye then restart system. 4) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	AutoSert HP failure – travel out of range.	<ol style="list-style-type: none"> 1) Current AutoSert function is terminated. 2) AutoSert functions are disabled. 3) Red AutoSert handpiece icon displayed. 4) Handpiece status displays “AutoSert” in red. 	<ul style="list-style-type: none"> • Replace AutoSert handpiece. • Replace US Controller PCB with US Front Panel and reload Generator software/logicware.
893	Advisory	<p>AutoSert handpiece calibration failed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Replace AutoSert Handpiece. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	AutoSert HP failure – calibration failed.	Same as previous entry.	<ul style="list-style-type: none"> • Replace AutoSert handpiece. • Replace US Controller PCB with US Front Panel and reload Generator software/logicware.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
894	Advisory	Handpiece must be in fully retracted position prior to autoclave. Recommended actions: 1) Reinsert AutoSert Handpiece.	AutoSert HP failure – unexpected AutoSert handpiece disconnect. Note: Handpiece retracts when re-inserted and calibration performed.	AutoSert functions are disabled.	<ul style="list-style-type: none"> Replace AutoSert handpiece. Replace US Controller PCB with US Front Panel and reload Generator software/logicware.
895	Advisory	Handpiece fault detected. Recommended actions: 1) Replace AutoSert Handpiece. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	AutoSert HP failure – corrupt handpiece (bad data)	1) AutoSert functions are disabled. 2) Red handpiece icon displayed. 3) Handpiece status displays “Unknown”.	<ul style="list-style-type: none"> Replace US Controller PCB with US Front Panel and reload Generator software/logicware.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
897	Advisory	<p>Handpiece fault detected.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Replace AutoSert Handpiece. 2) If condition persists and in surgery, stabilize the eye then restart system. 3) If condition persists after restart, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>AutoSert HP failure - unexpected motor feedback/movement.</p> <p>Note: Mechanism will check for this condition at startup and while the AutoSert handpiece is connected.</p>	<p>1) AutoSert functions are disabled.</p> <p>2) Red AutoSert handpiece icon displayed.</p> <p>3) Handpiece status displays "Unusable".</p>	<ul style="list-style-type: none"> • Replace US Controller PCB with US Front Panel and reload Generator software/logicware.
PUMP MECHANISM – 9XX					
901	Warning	<p>Vitrectomy not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	None	<ul style="list-style-type: none"> • Reload MFIO PCB software/logicware. • Replace MFIO PCB and reload MFIO PCB software/logicware if necessary.
903	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload MFIO PCB software/logicware. • Replace MFIO PCB and reload MFIO PCB software/logicware if necessary.
905	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload MFIO PCB software/logicware. • Replace MFIO PCB and reload MFIO PCB software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
907	Warning	Same as previous entry.	Vent valve failure.	Same as previous entry.	<ul style="list-style-type: none"> Check cable connection W133_3 from MFIO (J8) to Pneumatics Manifold (SV2). Check tubings (yellow and blue) from Main Manifold to Pneumatics Front Manifold. Leak in Pneumatics Manifold (SV2). Replace Pneumatics Manifold.
908	Warning	Same as previous entry.	Vit isolation valve failure.	Same as previous entry.	<ul style="list-style-type: none"> Check cable connection W143/W133_4 from MFIO (J8) to Pneumatics Manifold (SV3). Leak in Pneumatics Manifold (SV3). Replace Pneumatics Manifold. Replace MFIO PCB assembly.
909	Warning	Same as previous entry.	Pump isolation valve failure.	Same as previous entry.	<ul style="list-style-type: none"> Check connection W133_1 from MFIO (J8) to Pneumatics Manifold (SV1). Replace Pneumatics Manifold. Replace MFIO PCB assembly.
910	Warning	Same as previous entry.	Pump motor failure.	Same as previous entry.	<ul style="list-style-type: none"> Check MFIO PCB (J4), 24V to Pneumatics Pump. Replace Pneumatics pump.
911	Warning	Same as previous entry.	Charge timeout.	Same as previous entry.	<ul style="list-style-type: none"> Check MFIO PCB (J4), 24V to Pneumatics Pump. Check tubing from Pneumatics Pump to Pneumatics Manifold for leakage. Check cable connection A28SENSES1 at the Pneumatics Manifold. Replace Pneumatics pump. Replace Pneumatics Manifold.
912	Warning	Same as previous entry.	Excessive pressure.	Same as previous entry.	<ul style="list-style-type: none"> Replace Pneumatics Manifold.
926	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
927	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
928	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
929	Warning	Same as previous entry.	Footswitch mechanism fault.	Same as previous entry.	Same as previous entry.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
930	Warning	Same as previous entry.	Footswitch mechanism timeout.	Same as previous entry.	Same as previous entry.
931	Warning	Same as previous entry.	Footswitch mechanism range error.	Same as previous entry.	Same as previous entry.
932	Warning	Same as previous entry.	Fluidics mechanism fault.	Same as previous entry.	Same as previous entry.
933	Warning	Same as previous entry.	Fluidics mechanism timeout.	Same as previous entry.	Same as previous entry.
934	Warning	Same as previous entry.	Fluidics mechanism range error.	Same as previous entry.	Same as previous entry.
944	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
945	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
946	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
949	Warning	Same as previous entry.	Multifunction subsystem fault.	Same as previous entry.	Same as previous entry.
950	Advisory	<p>Pump leak detected. Vitreotomy cutting may be unavailable.</p> <p>Recommended actions: 1) Verify if vitrectomy cutter is disabled. 2) If condition persists, note advisory number and contact Alcon Technical Services.</p> <p>See the About Dialog for Alcon Technical Services contact information.</p>	Leak detected.	None	<ul style="list-style-type: none"> Check Pneumatics pump connection for leakage. Replace Pneumatics pump assembly.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
AUTOCAP MECHANISM – 10XX					
1001	Warning	<p>Capsulotomy is not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	None	<ul style="list-style-type: none"> • Check W101 cable from MFIO (J1) to Upper Backplane PCB (J4). This is the 24VDC supplied to the Fluidics and US Controller PCBs. • Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3). • Check Blind Mate connection from Upper BackPlane PCB to US Controller PCB. • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
1003	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
1005	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
1006	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
1015	Warning	Same as previous entry.	<p>Incompatible hardware.</p> <p>Note: This fault occurs only at system startup, if the AutoCap EEPROM data CRC check fails.</p>	Same as previous entry.	<ul style="list-style-type: none"> • Reload Generator Software/logicware. • Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
1026	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
1027	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
1028	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
1029	Warning	Same as previous entry.	Footswitch mechanism fault.	Same as previous entry.	Same as previous entry.
1030	Warning	Same as previous entry.	Footswitch mechanism timeout.	Same as previous entry.	Same as previous entry.
1031	Warning	Same as previous entry.	Footswitch mechanism range error.	Same as previous entry.	Same as previous entry.
1044	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
1045	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
1046	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
1049	Warning	Same as previous entry.	Generator subsystem fault.	Same as previous entry.	Same as previous entry.
POWER CONTROL MECHANISM – 11XX					
1101	Warning	<p>Mechanism power control error.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye. 2) Press Standby Switch for 5 seconds to shutdown system. 3) Restart system. 4) If condition persists, note Warning number and contact Alcon Technical Services. <p>Alcon Technical Services <Contact Info System Setting></p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	<p>Note: This Warning can't be dismissed by the user.</p>	<ul style="list-style-type: none"> • Replace MFIO PCB and reload its Software/logicware if necessary.
1103	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload MFIO PCB Software/logicware. • Replace MFIO PCB and reload its Software/logicware if necessary.
1106	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload MFIO PCB Software/logicware. • Replace MFIO PCB and reload its Software/logicware if necessary.
1149	Warning	Same as previous entry.	Multifunction subsystem fault.	Same as previous entry.	<ul style="list-style-type: none"> • Reload MFIO PCB Software/logicware. • Replace MFIO PCB and reload its Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
1150	Advisory	<p>Backup power service needed.</p> <p>System will shut down immediately if AC Power is lost.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) You may proceed with surgery. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Battery is missing, disconnected or discharged (open or shorted cells).	None	<ul style="list-style-type: none"> • Check 40A fuse on the MFIO PCB. • Check batteries cable connections and recharge batteries. • Replace both batteries and charge batteries if necessary.
1151	Advisory	<p>Backup power temporarily unavailable. Battery is recharging.</p> <p>System will shut down immediately if AC Power is lost.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) You may proceed with surgery. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Battery is low and recharging.	None.	<ul style="list-style-type: none"> • Check batteries cable connections and recharge batteries. • Replace both batteries and charge batteries if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
1153	Advisory	<p>Backup power unavailable due to battery temperature out of range. This may be a temporary condition caused by extreme ambient temperature.</p> <p>System will shut down immediately if AC Power is lost.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) You may proceed with surgery. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Battery temperature out of range while operating on AC power.	After this Advisory is generated once, it isn't generated again until the Console is rebooted.	<ul style="list-style-type: none"> • Check batteries cable connections and recharge batteries. • Replace both batteries and charge batteries if necessary.
1154	Advisory	Same as previous entry.	Battery current sensor bad.	None	<ul style="list-style-type: none"> • Replace MFIO PCB and reload its Software/logicware if necessary.
1155	Advisory	N/A	Battery load is bad or battery voltage is too low to use load.	The event is saved in the Event Log but the advisory is not displayed to the user.	<ul style="list-style-type: none"> • Check batteries cable connections and recharge batteries. • Replace both batteries and charge batteries if necessary.

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EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
1156	Advisory	<p>Backup power unavailable.</p> <p>System will shut down immediately if AC Power is lost.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) You may proceed with surgery. 2) If condition persists, note Advisory number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Battery charger bad.	None	<ul style="list-style-type: none"> • Replace both batteries and charge batteries if necessary. • Replace MFIO PCB and reload its Software/logicware if necessary.
WIRELESS MECHANISM – 12XX					
1201	Warning	<p>Wireless features not available.</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	None	<ul style="list-style-type: none"> • Replace FTSW Modem and reload Modem software if necessary. • Replace MFIO PCB and reload its Software/logicware if necessary.
1203	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload FTSW Modem software. • Replace FTSW Modem and reload Modem software if necessary.
1205	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload FTSW Modem software. • Replace FTSW Modem and reload Modem software if necessary.

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EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
1206	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload FTSW Modem software. Replace FTSW Modem and reload Modem software if necessary.
1220	Warning	Same as previous entry.	Modem error.	Same as previous entry.	<ul style="list-style-type: none"> Reload FTSW Modem software. Replace FTSW Modem and reload Modem software if necessary.
1221	Warning	Same as previous entry.	Persistent settings bad CRC.	Same as previous entry.	<ul style="list-style-type: none"> Reload FTSW Modem software. Replace FTSW Modem and reload Modem software if necessary.
1226	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
1227	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
1228	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
1244	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
1245	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
1246	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
1249	Warning	Same as previous entry.	Multifunction subsystem fault.	Same as previous entry.	Same as previous entry.
1250	Advisory	<p>Wireless channel is already in use by another Centurion console, LX3 Microscope, SGS or HDMC.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Open the System Settings dialog and change the Wireless Footswitch Channel. 	Channel conflict	This advisory is suppressed while a wired footswitch is connected and an SGS, HDMC, or Microscope is not connected. (This avoids a nuisance advisory.)	<ul style="list-style-type: none"> Change wireless channel.

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EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
1260	Advisory	<p>SGS communication lost.</p> <p>Recommended actions:</p> <p>1) Move SGS and console closer, eliminate obstruction, or open the System Settings dialog and change the Wireless Footswitch Channel.</p>	<p>Communication timeout (communication was established, but console is no longer hearing from SGS).</p> <p>Changing the Footswitch Channel may solve this problem.</p>	<p>1) SGS status indicates SGS not connected.</p> <p>2) If communication resumes while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p>	<ul style="list-style-type: none"> Change wireless channel.
1261	Advisory	<p>Microscope communication lost.</p> <p>Recommended actions:</p> <p>1) Move Microscope and console closer, eliminate obstruction, or open the System Settings dialog and change the Wireless Footswitch Channel.</p>	<p>Communication timeout (communication was established, but console is no longer hearing from Microscope).</p> <p>Changing the Footswitch Channel may solve this problem.</p>	<p>1) Microscope status indicates Microscope not connected.</p> <p>2) If communication resumes while the dialog is displayed, the dialog is automatically dismissed. The dialog is not automatically dismissed until it has been displayed for at least 5 seconds.</p>	<ul style="list-style-type: none"> Change wireless channel.

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EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
STONE MECHANISM – 13XX					
1301	Warning	Fluidics and Coagulation not available. Recommended actions: 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Mechanism timeout error. Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.	None	<ul style="list-style-type: none"> Replace MFIO PCB and reload its Software/logicware if necessary.
1303	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	<ul style="list-style-type: none"> Reload MFIO PCB Software/logicware. Replace MFIO PCB and reload its Software/logicware if necessary.
1305	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload MFIO PCB Software/logicware. Replace MFIO PCB and reload its Software/logicware if necessary.
1306	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload MFIO PCB Software/logicware. Replace MFIO PCB and reload its Software/logicware if necessary.
1326	Warning	Same as previous entry.	Host fault	Same as previous entry.	This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
1327	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
1328	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
1329	Warning	Same as previous entry.	Footswitch mechanism fault.	Same as previous entry.	Same as previous entry.
1330	Warning	Same as previous entry.	Footswitch mechanism timeout.	Same as previous entry.	Same as previous entry.
1331	Warning	Same as previous entry.	Footswitch mechanism range error.	Same as previous entry.	Same as previous entry.
1344	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
1345	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
1346	Warning	Same as previous entry.	Power Control mechanism range error.	Same as previous entry.	Same as previous entry.
1349	Warning	Same as previous entry.	Multifunction subsystem fault.	Same as previous entry.	Same as previous entry.

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EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
OPERATOR CONTROL – 14XX					
1401	Warning	<p>Fluidics not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Mechanism timeout error.</p> <p>Note: This Warning is generated by the Host based on 1) absence of communication or 2) Status Mode = Not Configured.</p>	None	<ul style="list-style-type: none"> • MFIO PCB stopped communicating. • This is a dependent mechanism fault which has transitioned into the fault state because another mechanism (without which it cannot function) has faulted.
1403	Warning	Same as previous entry.	Mechanism software error.	Same as previous entry.	Same as previous entry.
1405	Warning	Same as previous entry.	Configuration range error.	Same as previous entry.	Same as previous entry.
1406	Warning	Same as previous entry.	Command range error.	Same as previous entry.	Same as previous entry.
1426	Warning	Same as previous entry.	Host fault.	Same as previous entry.	Same as previous entry.
1427	Warning	Same as previous entry.	Host timeout.	Same as previous entry.	Same as previous entry.
1428	Warning	Same as previous entry.	Host range error.	Same as previous entry.	Same as previous entry.
1444	Warning	Same as previous entry.	Power Control mechanism fault.	Same as previous entry.	Same as previous entry.
1445	Warning	Same as previous entry.	Power Control mechanism timeout.	Same as previous entry.	Same as previous entry.
1446	Warning	Same as previous entry.	Power control mechanism range error.	Same as previous entry.	Same as previous entry.
1449	Warning	Same as previous entry.	Multifunction subsystem fault.	Same as previous entry.	Same as previous entry.

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EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
IA MECHANISM – 20XX					
2000	Warning	<p>Fluidics, Vitrectomy, and Coagulation not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	Reference voltage out of range.	Same action as Fluidics Warnings, Vit Warnings, and Coag Warnings.	<ul style="list-style-type: none"> • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
2001	Warning	Same as previous entry.	<p>Subsystem timeout error.</p> <p>Note: This Warning is generated by the Host based on absence of communication.</p>	Same as previous entry.	<ul style="list-style-type: none"> • Check W101 cable from MFIO (J1) to Upper Backplane PCB (J4). This is the 24VDC supplied to the Fluidics and US Controller PCBs. • Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3). • Check Blind Mate connection from Upper BackPlane PCB to Fluidic PCB. • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
2002	Warning	Same as previous entry.	FlexRay error.	Same as previous entry.	<ul style="list-style-type: none"> • Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3). • Check Blind Mate connection from Upper BackPlane PCB to Fluidic PCB. • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
2003	Warning	Same as previous entry.	Subsystem software error.	Same as previous entry.	<ul style="list-style-type: none"> • Reload Fluidic Software/logicware. • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
2004	Warning	Same as previous entry.	24V supply out of range. 12V supply out of range. 1.2V supply out of range. 3.3V supply out of range. 5.0V supply out of range.	Same as previous entry.	<ul style="list-style-type: none"> • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
2005	Warning	Same as previous entry.	Auxiliary reference out of range.	Same as previous entry.	<ul style="list-style-type: none"> • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
2006	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> • Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
2015	Warning	Fluidics, Vitrectomy, and Coagulation not available. Recommended actions: 1) Restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Incompatible hardware. Note: This fault occurs only at system startup.	Same as previous entry.	<ul style="list-style-type: none"> Replace Fluidics PCB assembly & reload Fluidics software/logicware if necessary (need to perform AI Travel Calibration and Pneumatics Calibration).
GENERATOR MECHANISM – 21XX					
2100	N/A	Ultrasonics, Capsulotomy, and AutoSert not available. Recommended actions: 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Reference voltage out of range.	Same action as Ultrasonics Warnings, AutoCap Warnings, and IOL Warnings.	<ul style="list-style-type: none"> Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
2101	Warning	Same as previous entry.	Subsystem timeout error. Note: This Warning is generated by the Host based on absence of communication.	Same as previous entry.	<ul style="list-style-type: none"> Check FlexRay communication cable (W102) from MFIO PCB (J2) to Upper BackPlane PCB (J3).
2102	Warning	Same as previous entry.	FlexRay error.	Same as previous entry.	<ul style="list-style-type: none"> Replace US Controller PCB assembly& reload Generator Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
2103	Warning	Same as previous entry.	Subsystem software error.	Same as previous entry.	<ul style="list-style-type: none"> Reload Generator Software/logicware. Replace US Controller PCB assembly& reload Generator software/logicware if necessary.
2104	Warning	Same as previous entry.	24V supply out of range. 12V supply out of range. 1.2V supply out of range. 3.3V supply out of range. 5.0V supply out of range.	Same as previous entry.	<ul style="list-style-type: none"> Replace US Controller PCB assembly& reload Generator Software/logicware if necessary.
2106	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload Generator Software/logicware. Replace US Controller PCB assembly & reload Generator software/logicware if necessary.
2115	Warning	Ultrasonics, Capsulotomy, and AutoSert not available. Recommended actions: 1) Restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Incompatible hardware. Note: This fault occurs only at system startup.	Same as previous entry.	<ul style="list-style-type: none"> Replace US Controller PCB assembly & reload Generator software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
MULTIFUNCTION SUBSYSTEM - 22XX					
2200	Warning	Footswitch, IV Pole, Pump, Audio, and Operator Control not available. Recommended actions: 1) If in surgery, stabilize the eye then restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. See the About Dialog for Alcon Technical Services contact information.	Reference voltage out of range.	Same action as Footswitch Warnings, IV Pole Warnings, Pump Warnings, Audio Warnings, and Operator Control Warnings.	<ul style="list-style-type: none"> Replace MFIO PCB and reload its Software/logicware if necessary.
2201	Warning	Same as previous entry.	Subsystem timeout error. Note: This Warning is generated by the Host based on absence of communication.	Same as previous entry.	<ul style="list-style-type: none"> Replace MFIO PCB and reload its Software/logicware if necessary.
2202	Warning	Same as previous entry.	FlexRay error.	Same as previous entry.	<ul style="list-style-type: none"> Replace MFIO PCB and reload its Software/logicware if necessary.
2203	Warning	Same as previous entry.	Subsystem software error.	Same as previous entry.	<ul style="list-style-type: none"> Reload MFIO PCB Software/logicware. Replace MFIO PCB and reload its Software/logicware if necessary.
2204	Warning	Same as previous entry.	24V supply out of range. 1.2V supply out of range. 3.3V supply out of range. 5.0V supply out of range.	Same as previous entry.	<ul style="list-style-type: none"> Check 24V from DC power supply and replace if necessary. Replace MFIO PCB and reload its Software/logicware if necessary.
2206	Warning	Same as previous entry.	Command range error.	Same as previous entry.	<ul style="list-style-type: none"> Reload MFIO PCB Software/logicware. Replace MFIO PCB and reload its Software/logicware if necessary.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
2215	Warning	<p>Footswitch, IV Pole, Pump, Audio, and Operator Control not available.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Restart system. 2) If condition persists after restart, note Warning number and contact Alcon Technical Services. <p>See the About Dialog for Alcon Technical Services contact information.</p>	<p>Incompatible hardware.</p> <p>Note: This fault occurs only at system startup.</p>	Same as previous entry.	<ul style="list-style-type: none"> • Replace MFIO PCB and reload its Software/logicware if necessary.
Error Message occurred during System Installer (Host) - 30XX					
3034	Warning	"Backup of DATA partition failed. Replaced backup media and try again."	Backup Failed	No action	<ul style="list-style-type: none"> • Reseat or replace backup USB media.
3035	Warning	Contextual information describing the cause.	Touchscreen Calibration Failed	No action	<ul style="list-style-type: none"> • Recalibrate Touchscreen. • Replace Touchscreen LCD Display assembly.
3036	Warning	"Restore to the DATA partition failed. Examine the backup media offline for possible errors."	Restore Failed	No action	<ul style="list-style-type: none"> • Reseat backup USB media.
3037	Warning	"The CPU fan has failed. Cancel pending actions and shut down immediately."	CPU Fan Failed	CPU Fan Failed	<ul style="list-style-type: none"> • Check and reseat CPU fan cable inside the Host.
3038	Warning	"The system fan has failed. Monitor CPU temperature and shut down following pending actions."	System Fan Failed	System fan failed	<ul style="list-style-type: none"> • Check and reseat system fan cable inside the Host.
3067	Fault	"An unrecoverable error was encountered. Upload the event log to Alcon ITC for diagnosis."	Software Error	Shut down system	<ul style="list-style-type: none"> • Reload software.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
3068	Fault	"Verification of the installation media failed. Remove the media, press Shut Down, and try different media. (Be sure to use the Service Media Preparation Utility to prepare the USB drive.)"	Service Media check failed	Shut down system	<ul style="list-style-type: none"> Try different USB Service Media.
3069	Fault	"Shut down, check the hard disk and cable connections, and try again."	No Hard Drive Detected	Shut down the system	<ul style="list-style-type: none"> Check Hard Drive cable connection. Replace Hard Drive.
3070	Fault	"Manufacturer make or model number was not recognized. Replace the Host Module."	Host Module Initialization Failed	Shut down system	<ul style="list-style-type: none"> Replace Host Module.
3071	Fault	"The hard drive installed is not supported. Replace the hard drive and try again."	Unsupported Hard Drive Detected	Shut down system	<ul style="list-style-type: none"> Replace with a supported Hard Drive.
3103	Fault	"Software error"	Software error	Prompt operator to reinstall software.	<ul style="list-style-type: none"> Reinstall software
Error Message occurred during Sub-system Installer – 33XX					
3301	Fault	System not operational. Recommended actions: 1) Shut down the Installer. 2) Press Standby Switch to shut down system. 3) Restart system. 4) If condition persists, note Fault number and contact Alcon Technical Services.	Initialization error: <error detail>	The system records the event in the Event Log.	<ul style="list-style-type: none"> Reboot the system If problem persists, reinstall Host software. If problem persists, replace MFIO PCB and reload sub-system software.
3303	Fault	Same as above	Software error: <error detail>	Same as above	<ul style="list-style-type: none"> Reboot the system If problem persists, reinstall Host software.
3304	Fault	Same as above	Corrupt or missing file: <file name>	Same as above.	<ul style="list-style-type: none"> Reboot the system If problem persists, reinstall Host software.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
3310	Advisory	<p>Operation failed on one or more subsystems.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Retry the operation. 2) If condition persists, note Advisory number and contact Alcon Technical Services. 	<Failure detail>	<p>The system records the event in the Event Log.</p> <p>"OK" button: closes the dialog and returns to the application.</p>	<ul style="list-style-type: none"> • Reboot the system. • Check cable connections of sub-modules and reinstall the sub-system installer. • Check JTAG cable (W102) from MFIO to Upper Backplane PCB if failed sub-modules are from the top (Fluidics, OPS, Bag ID, Generator). • If failed subsystem is MFIO, replace MFIO PCB and reload sub-system software. • If failed subsystem is Wi-Fi and rebooting the system does not correct the problem, replace Wi-Fi module and reinstall software.
3315	Advisory	<p>Modem installation failed to complete. MultiFunction subsystem may be inoperable until installation is successfully completed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Ensure footswitch network channel E is not in use by a nearby console. 2) Ensure Service Media is inserted in a Rear USB port. 3) Exit the installer by selecting Shut down, then cycle console power at the Standby Switch. 4) If condition persists, note Advisory number and contact Alcon Technical Services. 	Unable to execute modem programmer software on MultiFunction.	<p>The system records the event in the Event Log.</p> <p>"Shut down" button: Shuts down the host module. The screen will turn black and console power will remain active. The console must be powered down using the Standby or Power Switch.</p> <p>"Cancel" button: closes the dialog and returns to the application.</p>	<ul style="list-style-type: none"> • Reboot system. • Ensure footswitch network channel E is not in use by a nearby console. • Ensure a separate modem update is not in progress on a nearby console. • Replace system footswitch modem (at MFIO PCB) and reload sub-system software.

Table 4-2

EVENT CODES

Fluidics (Fluidics mechanism/Active Irrigation Interface)-1XX; Ultrasonics-2XX; Footswitch-3XX; Host-4XX; VIT-5XX; Coag-6XX; IV Pole-7XX; IOL-8XX; Pump-9XX; AutoCap-10XX; Power-11XX; Wireless (Footswitch)-12XX; Tone-13XX; Operator-14XX (PEL LED Bar and Remote Control); IA (Fluidics Control PCB)-20XX; Generator-21XX; Multifunction-22XX; System Installer Error Message (Host)-30XX & 31XX; Sub-System Installer Error Message - 33XX.

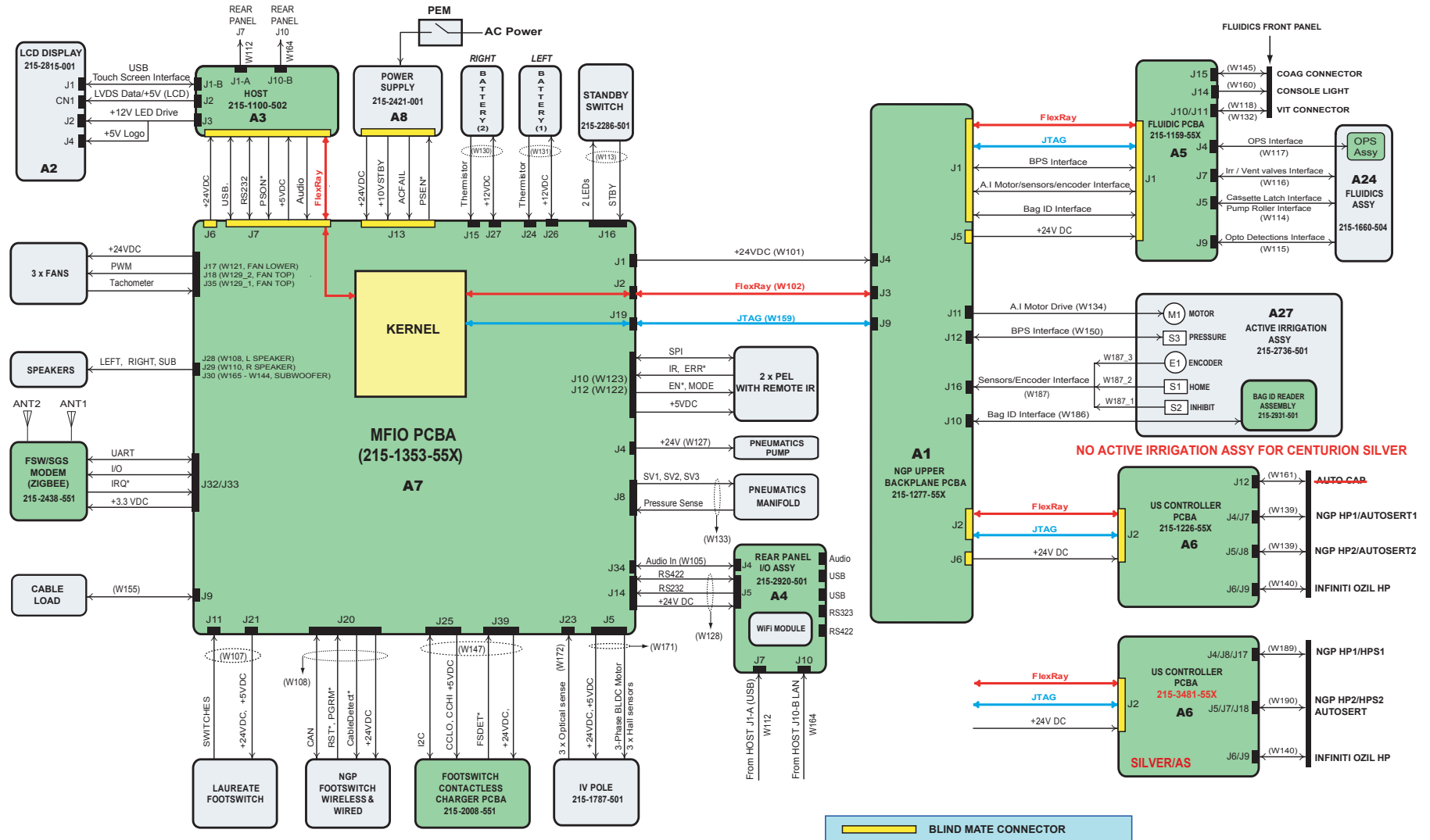
Event Code	Event Type	Message to User	Detail	System Action	Possible Cause/Corrective Action
3320	Advisory	<p>Operation failed.</p> <p>Recommended actions:</p> <ol style="list-style-type: none"> 1) Retry the operation. 2) If condition persists, note Advisory number and contact Alcon Technical Services. 	<p><Operation> failed on <subsystem>.</p> <p><Failure detail></p>	<p>The system records the event in the Event Log.</p> <p>“OK” button: closes the dialog and returns to the application.</p>	<ul style="list-style-type: none"> • (Same actions as 3310).

SECTION FIVE - SCHEMATICS

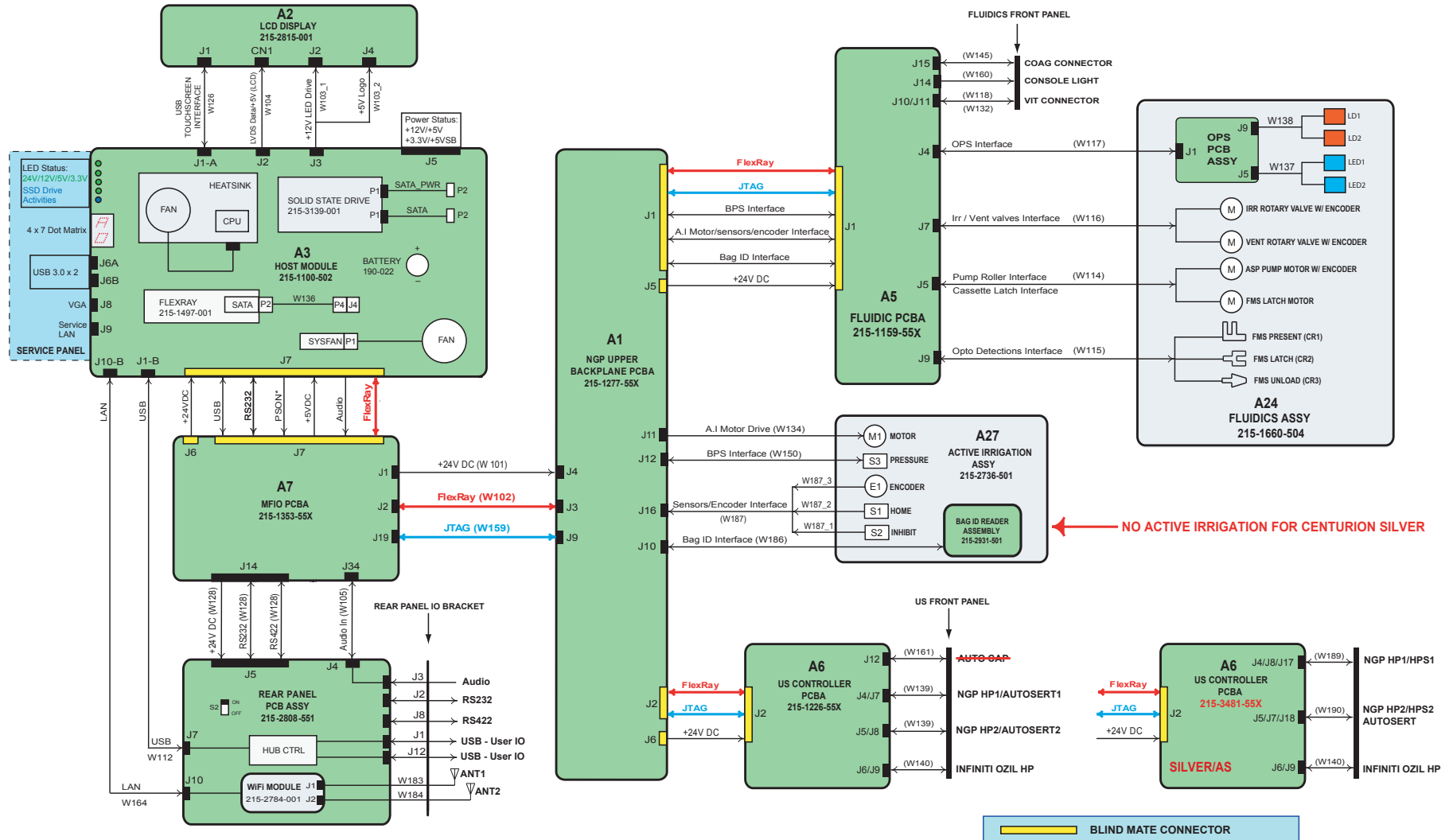
CONTENTS	
DESCRIPTION	PART NUMBER*
System Interconnections Overview	--
System Interconnect Diagram (Original)	215-0000-801 H
System Interconnect Diagram (Silver)	215-0000-804 A
Cable Schematics	--
W101 - 24V PWR BK PLN	215-1101-001 A
W103 - POWER, DISPLAY	215-1103-001 B
W102 - EXTERNAL SATA 24"	023-163 A
W105 - AUDIO EXT	215-1105-001 A
W109, W110 - SPEAKER	215-1110-001 A
W104 - VIDEO, DISPLAY	215-1104-001 A
W107 - FTSW, STD INTF	215-1107-001 A
W108 - ADV INTF	215-1108-001 A
W111 - POWER ENTRY	215-3002-001 B
W112 - USB 2.0, A PLUG 1M	023-167 A
W113 - STANDBY SWITCH	215-1113-001 A
W114 - FLUIDICS MOTOR	215-2997-001 C
W115 - LATCH MOTOR	215-3232-001 B
W117 - FLUIDICS OPS	215-2990-001 A
W116 - FLUIDICS CAS MTRS	215-2991-001 C
W118 - VIT DRV VALVE	215-1118-001 A
W121 - FAN	215-2857-001 A
W122 - PEL MFIO, LEFT	215-1122-001 A
W123 - PEL MFIO, RIGHT	215-1123-001 A
W126 - USB DISPLAY	215-2386-001 A
W127 - PNEUMATIC PUMP	215-1127-001 A
W128 - SERIAL	215-3005-001 A
W129 - FANS, UPPER	215-1129-001 B
W130 - BACKUP BATT PWR	215-1130-001 B
W131 - BACKUP BATT PWR	215-1131-001 B
W132 - VIT DRV SENSE	215-1132-001 A
W133 - MAIN MANIFOLD	215-1133-001 C
W134 - ACTIVE IRR	215-1819-001 C

CONTENTS	
DESCRIPTION	PART NUMBER*
W136 - SATA, STRAIGHT TO R/A	215-2798-001 B
W137 - LED	215-1137-001 C
W138 - LASER	215-3219-001 A
W139 - U/S HP (Original)	215-2870-001 A
W140 - U/S HP	215-2957-501 D
W143 - SV3 VALVE	215-1143-001 A
W144 - SUB WOOFER	215-2932-001 A
W145, W161 - COAG HP CONN	215-1145-001 A
W147, FTSW CHGR	215-2778-001 A
W148, PWR ENTRY GND	215-1148-001 B
W150, ACT IRR LOAD	215-3344-001 A
W151, HOSPITAL GRADE POWER CABLE	023-139 C
W152,153, RA-SMA JK RG178	023-144 B
W154, GROUND STRAP	215-2956-001 A
W155, BTRY TEST LOAD	215-2498-001 B
W159, ETHERNET, 8 COND 1.0M	023-166 A
W160, FRONT LIGHT	215-3092-001 A
W164, ETHERNET, 8 COND 1.0M	023-101 A
W165, SUB WOOFER	215-2933-001 A
W167, FAN, MF10	215-2960-001 A
W171, MOTOR ASSY, I/V POLE, W/BRAKE	215-2131-001 A
W172, HM SNS IV POLE	215-2462-001 A
W180, CASSETTE LATCH	215-2180-001 A
W181, GROUND STRAP	215-2982-001 A
W185, FOOT SWITCH	--
W182, FAN, US	215-2984-001 A
W183,184, COAX U FL CONN 150MM	021-014 A
W186, BAG ID	215-3062-001 A
W187, ACTIVE IRR	215-3063-001 A
W189 - U/S HP TOP (Silver & AS)	215-3473-001 B
W190 - U/S HP MID (Silver & AS)	215-3474-001 C

CENTURION SYSTEM INTERCONNECTIONS OVERVIEW (page 1 of 2)

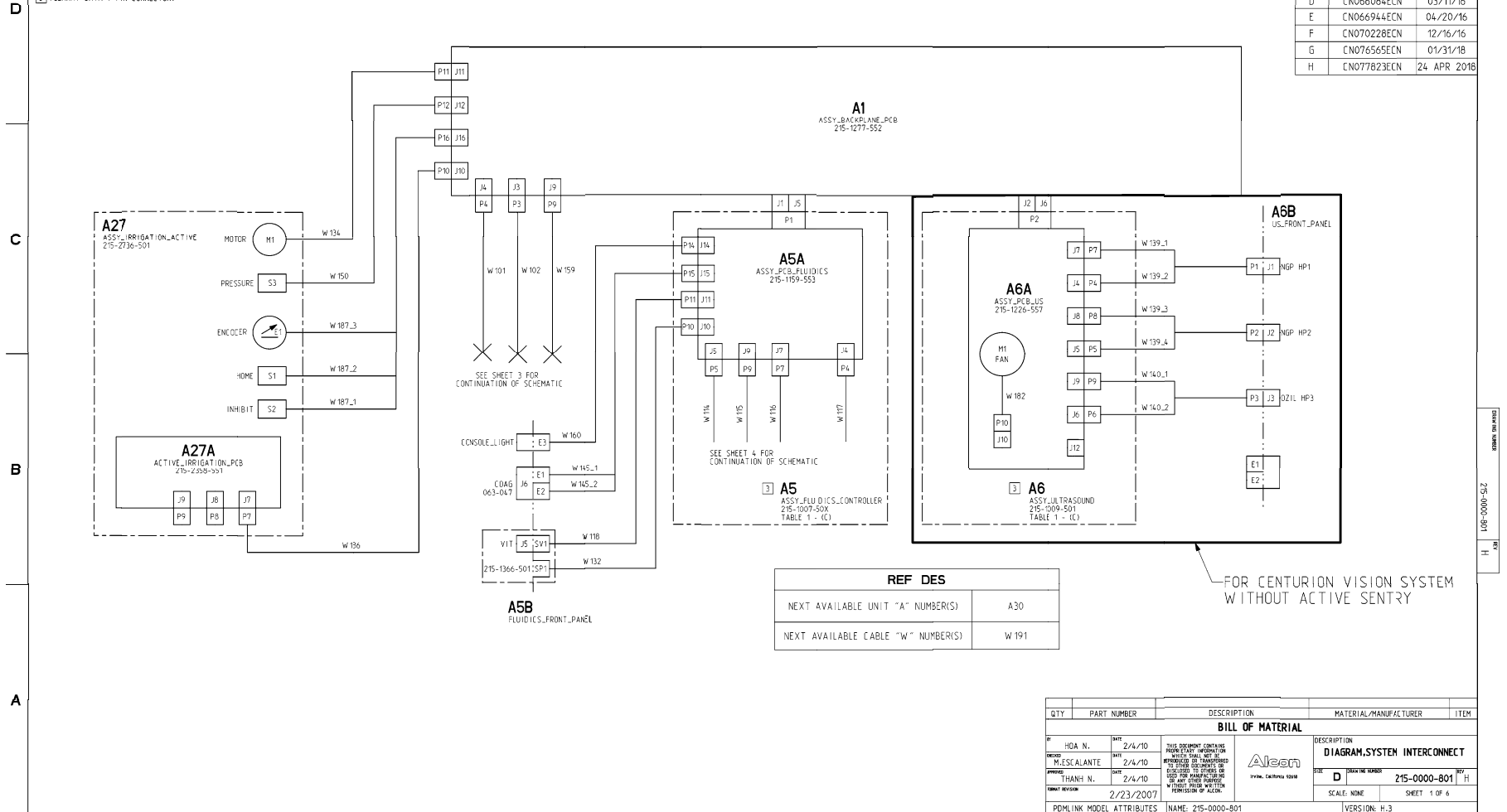


CENTURION SYSTEM INTERCONNECTIONS OVERVIEW (page 2 of 2)



REVISION HISTORY		
REV	ECN	DATE
P10	NOT RELEASED	04/04/13
A	CN045983ECN	07/23/13
B	CN046720ECN	08/06/13
C	CN061254ECN	05/01/15
D	CN066084ECN	03/11/16
E	CN066944ECN	04/20/16
F	CN070228ECN	12/16/16
G	CN076565ECN	01/31/18
H	CN077823ECN	24 APR 2018

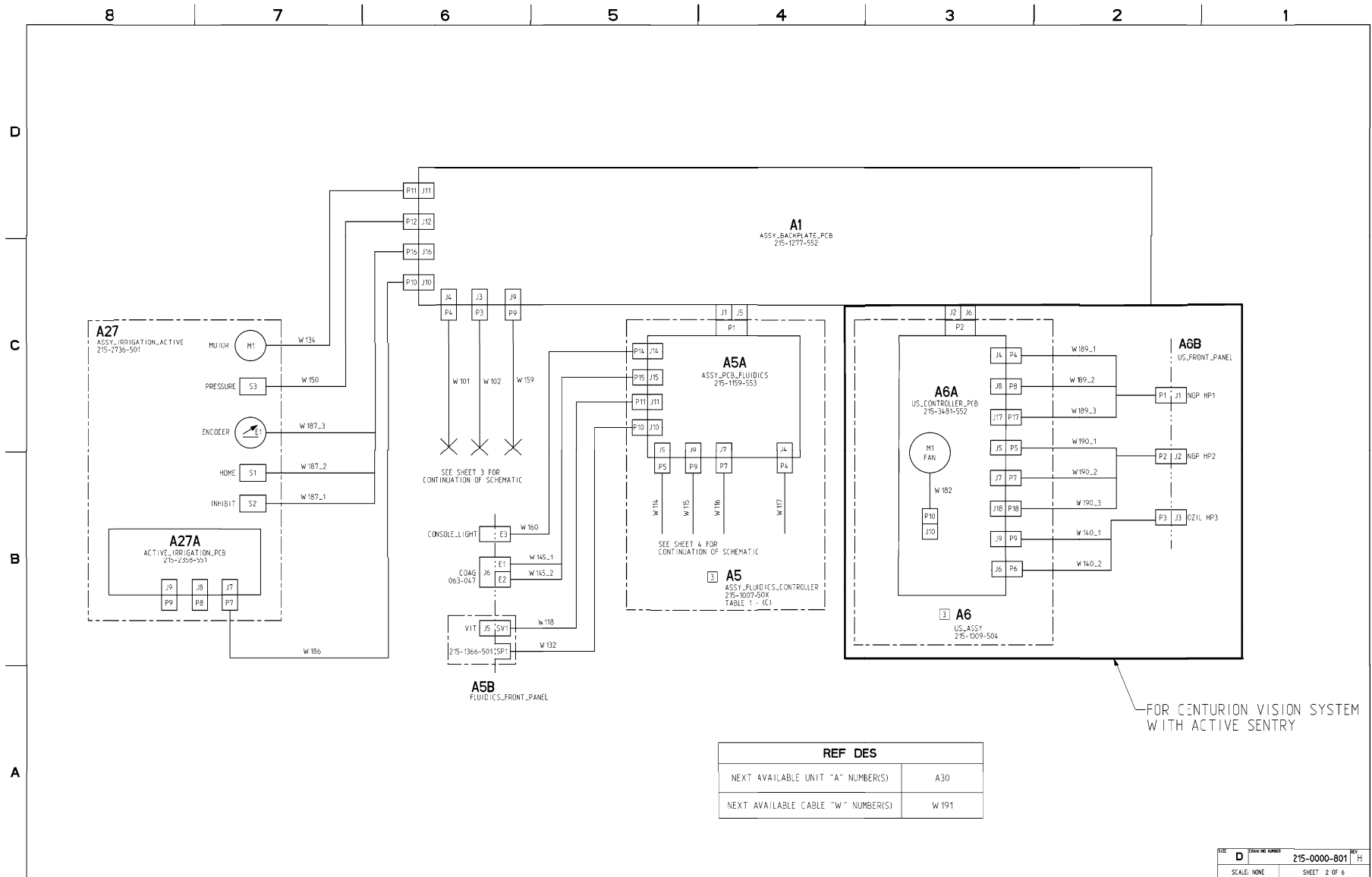
- NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET THIS DRAWING PER ASME Y14.100-2004, ASME Y14.5-2009, AND ALCON SPECIFICATION 701-026.
 2. REFERENCE CABLE PART NUMBER FOR SYSTEM INTERCONNECTION.
 3. SEE MODULE INTERCONNECTION SHEETS 1 THRU 4.
 4. POWER SUPPLY OUTPUT CONNECTOR.
 5. FLEXRAY SATA 7 PIN CONNECTOR.



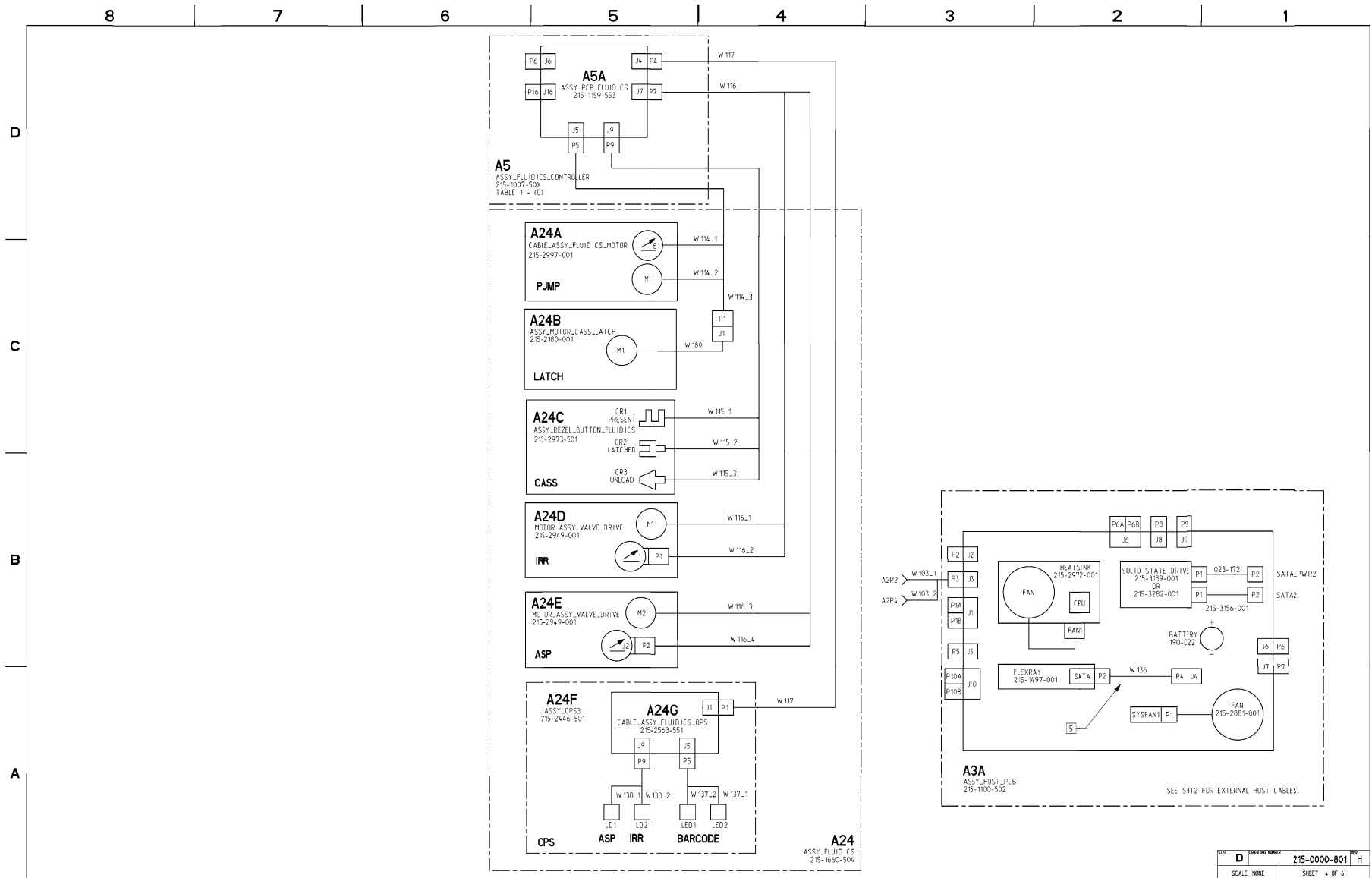
REF DES	
NEXT AVAILABLE UNIT "A" NUMBER(S)	A30
NEXT AVAILABLE CABLE "W" NUMBER(S)	W 191

FOR CENTURION VISION SYSTEM WITHOUT ACTIVE SENTRY

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
REV	HOA N.	DATE	DESCRIPTION	
DESIGN	M. ESCALANTE	2/4/10	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE WRITTEN PERMISSION OF ALCON.	
APPROVED	THANH N.	DATE	ALCON	
FORMAT REVISION	2/23/2007		SANTA CLARITA, CALIFORNIA 91380	
PDM LINK MODEL ATTRIBUTES			NAME: 215-0000-801	VERSION: H.3
			SCALE: NONE	SHEET 1 OF 6







DATE	DESIGNED BY	REV
D	215-0000-801	H
SCALE: NONE	SHEET 4 OF 6	

8 7 6 5 4 3 2 1

D

NOTE:
PARTS THAT HAVE MORE THAN ONE PART NUMBER AND POTENTIAL COMPATIBILITY ISSUES ARE LISTED IN TABLE 1. THEY ARE NOTED WITHIN THE DRAWING SCHEMATIC WITH LETTER DESIGNATORS IN PARENTHESIS, EX. (A)
PCBs WITH A -55X SUFFIX INDICATES ROHS COMPLIANT ASSEMBLY.

TABLE 1

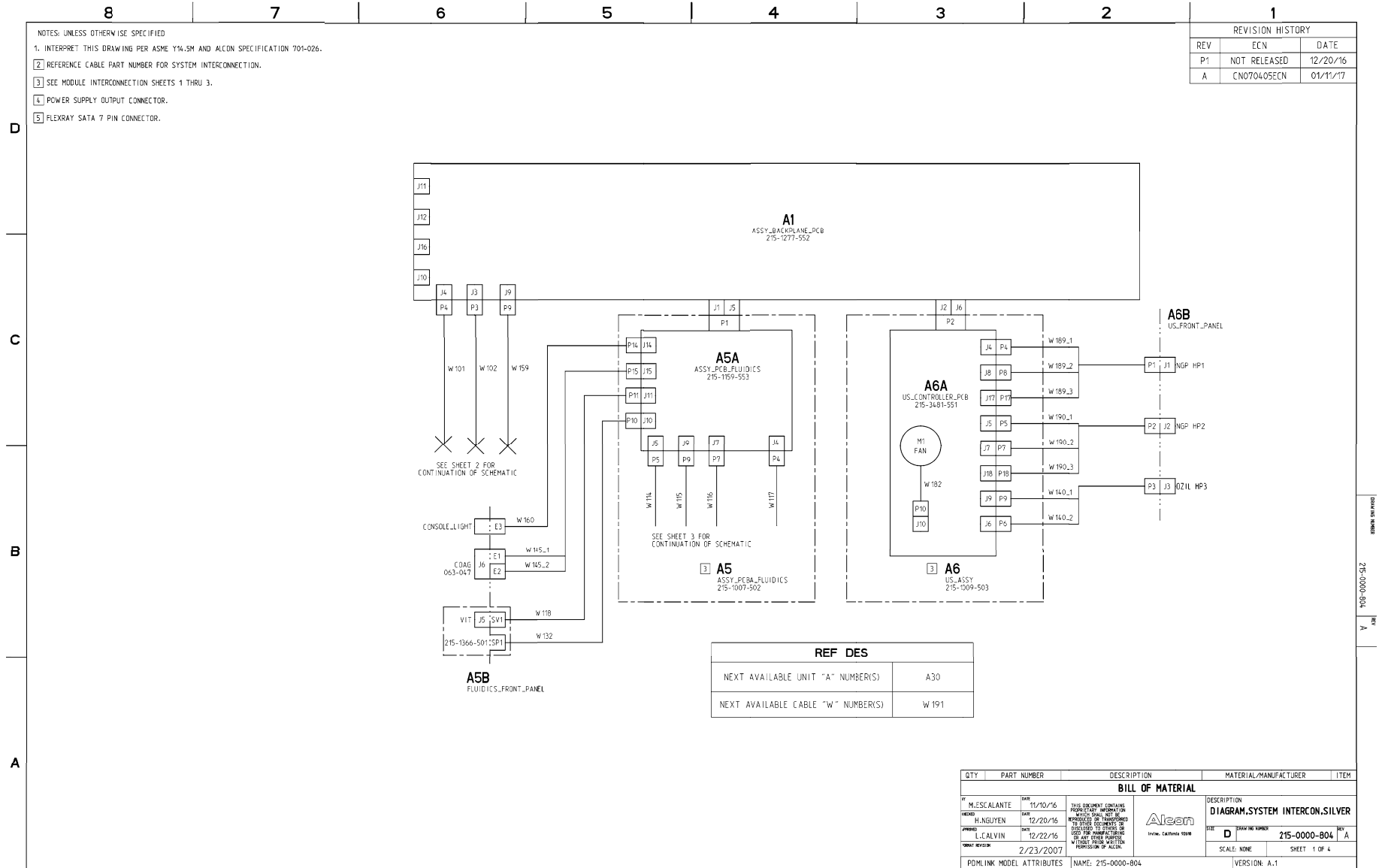
ITEM LETTER	PART NUMBER	DESCRIPTION	NOTES
(A)	215-1010-501	ASSY. MAIN MANIFOLD, PNEU MOD	REQUIRES SHORTER (18 INCH 215-3477-001) YELLOW PNEUMATIC LINE
	215-3337-501		REQUIRES AIR SOURCE 215-3242-501 AND LONGER (28 INCH 215-3477-002) YELLOW PNEUMATIC LINE
(B)	215-1027-501	ASSY. AIR SOURCE, PNEU MOD	ONLY COMPATIBLE WITH SYSTEMS CONTAINING THE ORIGINAL MAIN MANIFOLD MODULE 215-1010-501
	215-3242-501		COMPATIBLE WITH ALL MAIN MANIFOLD MODULES
(C)	215-1007-501	ASSY. FLUIDICS CONTROLLER	INCLUDES PNEUMATICS LINES FOR ORIGINAL MAIN MANIFOLD MODULE 215-1010-501
	215-1007-502		DOES NOT INCLUDE PNEUMATICS LINES, COMPATIBLE WITH ALL MAIN MANIFOLD MODULES

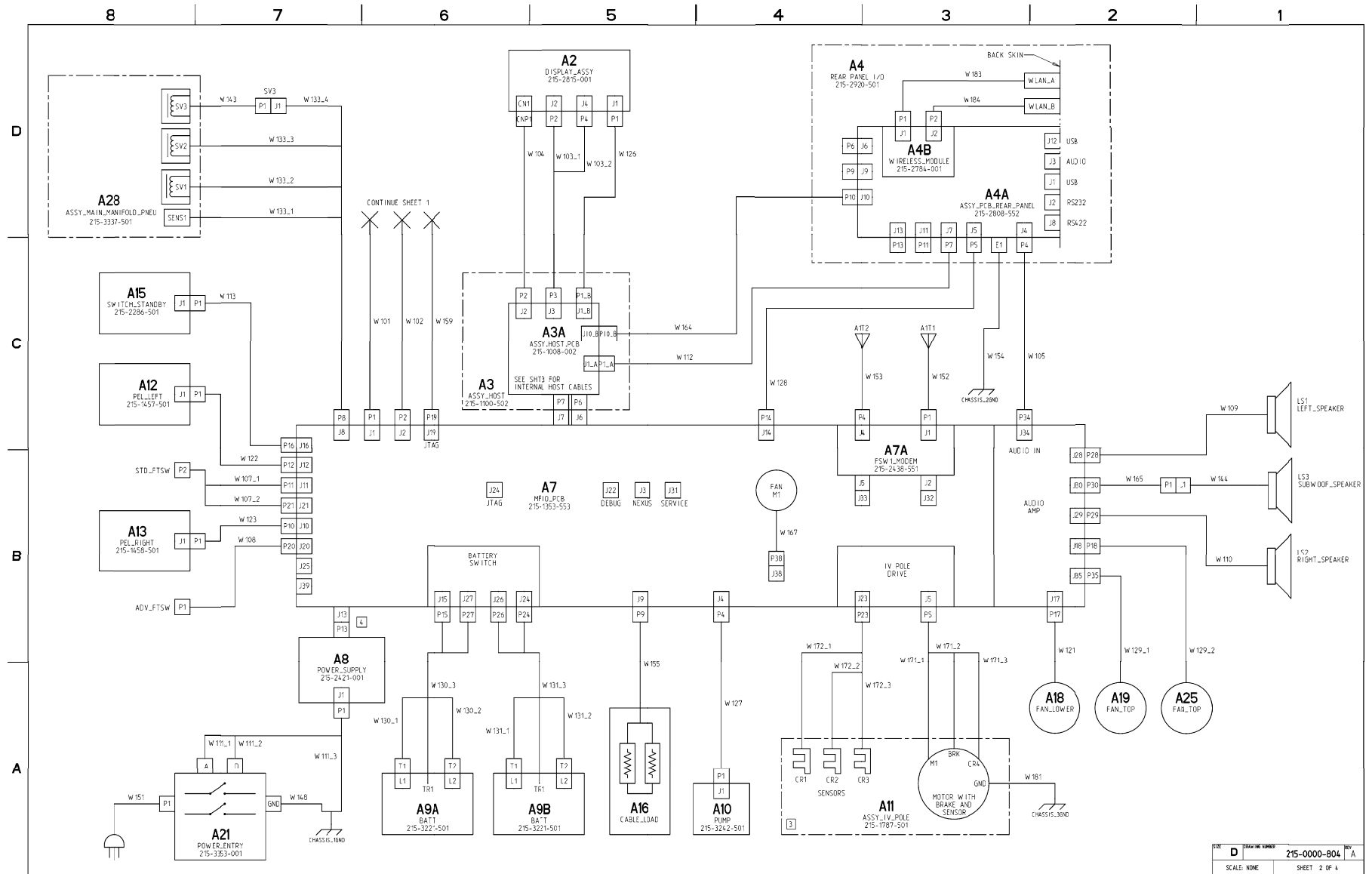
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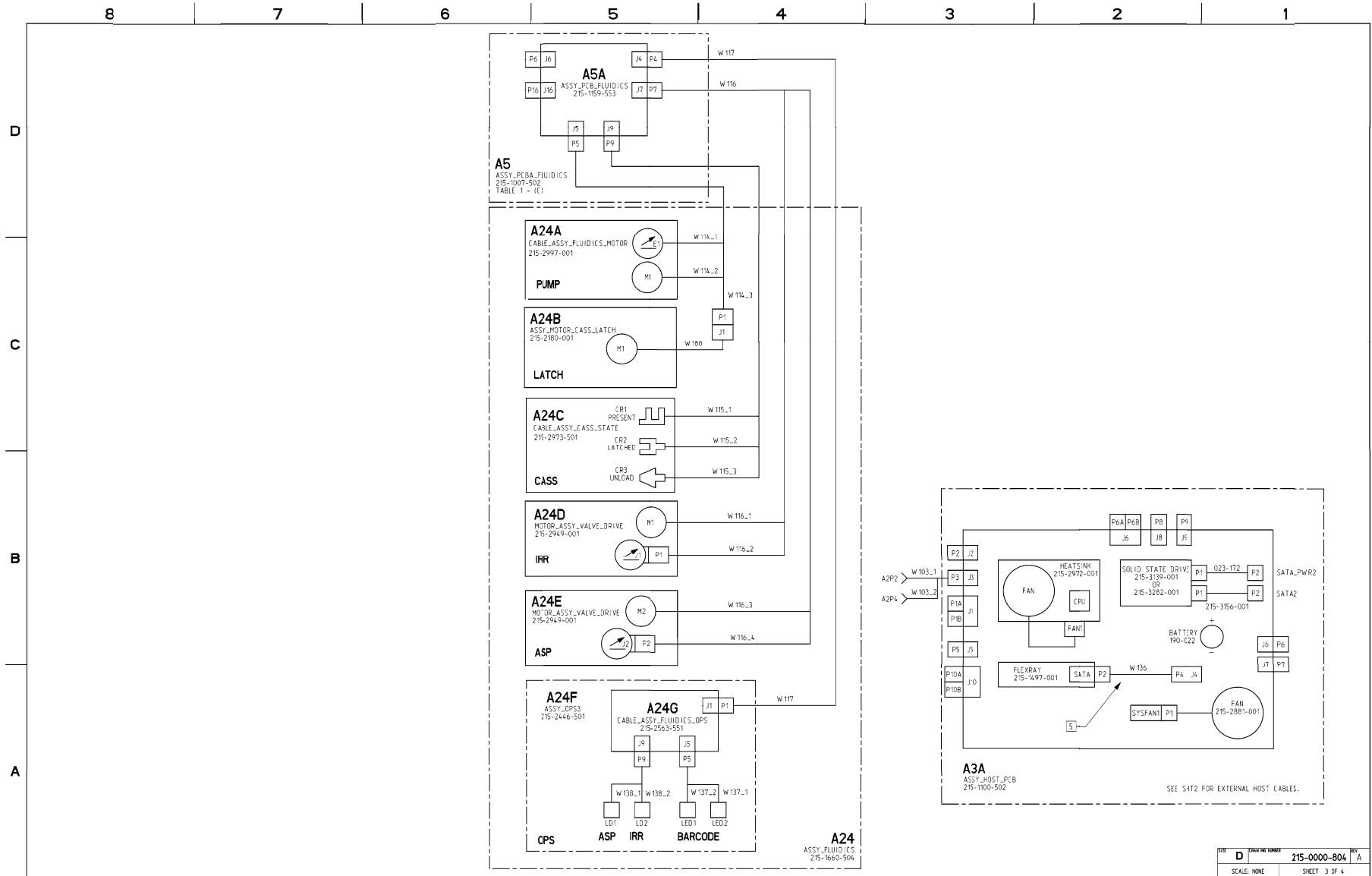
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A

DATE	DRAWN BY	REV
D	215-0000-801	H
SCALE: NONE		SHEET 5 OF 6







8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

CABLES

D

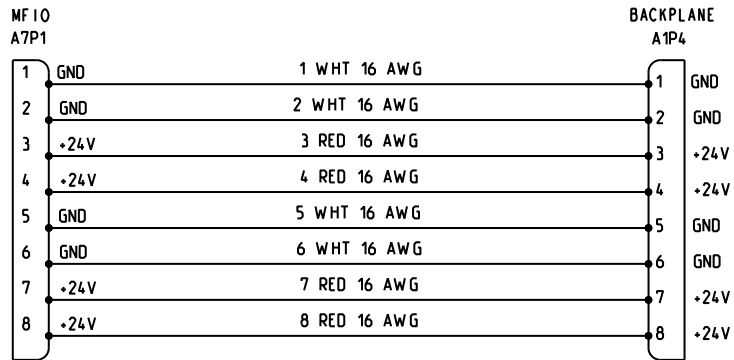
REF DES	ALCON PART NUMBER	CONNECTOR REF DES		DESCRIPTION	COMMENTS
		FROM	TO		
		MODULE/CONNECTOR	MODULE/CONNECTOR		
W101	215-1101-001	A1P4	A7P1	ASSY CABLE,24V PWR BK PLN W101	
W102	023-163	A1P3	A7P2	CABLE ASSY,EXTERNAL SATA 24IN	
W103.1	215-1103-001	A3AP3	A2P2	ASSY,CABLE,POWER,DISPLAY,W103	
W103.2	215-1103-001	A3AP3	A2P4	ASSY,CABLE,POWER,DISPLAY,W103	
W104.1	215-1104-001	A2LCP1	A3AP2	ASSY,CABLE,VIDEO,DISPLAY,W104	
W105	215-1105-001	A7P3L	A4AP4	CABLE ASSY,AUDIO EXT,W105	
W107.1	215-1107-001	STD_FTSW P2	A7P11	ASSY,CABLE,FTSW STD INTF W107	
W107.2	215-1107-001	STD_FTSW P2	A7P21	ASSY,CABLE,FTSW STD INTF W107	
W108	215-1108-001	ADV_FTSW P1	A7P20	ASSY,CABLE,FTSW ADV INTF W108	
W109	215-1110-001	LS1LS1	A7P28	CABLE ASSY,SPEAKER	
W110	215-1110-001	LS2LS1	A7P29	CABLE ASSY,SPEAKER	
W111.1	215-3002-001	A8P1	A21.A	CABLE ASSY,POWER ENTRY,W111	
W111.2	215-3002-001	A8P1	A21.D	CABLE ASSY,POWER ENTRY,W111	
W111.3	215-3002-001	A8P1	CHASSIS_IGNDND	CABLE ASSY,POWER ENTRY,W111	
W112	023-167	A3P1.A	A4AP7	CABLE ASSY,USB 2.0, A PLUG 30IN	
W113	215-1113-001	A1SP1	A7P16	CABLE ASSY,STANDBY SWITCH,W113	
W114.1	215-2997-001	ASA.P5	A24AE1	CABLE ASSY,FLUIDICS MOTOR,W114	
W114.2	215-2997-001	ASA.P5	A24AM1	CABLE ASSY,FLUIDICS MOTOR,W114	
W114.3	215-2997-001	ASA.P5	A24BP1	CABLE ASSY,FLUIDICS MOTOR,W114	
W115.1	215-3232-001	ASA.P9	A24CR1	CABLE ASSY,LATCH MOTOR,W115	
W115.2	215-3232-001	ASA.P9	A24LK2	CABLE ASSY,LATCH MOTOR,W115	
W115.3	215-3232-001	ASA.P9	A24CR3	CABLE ASSY,LATCH MOTOR,W115	
W116.1	215-2991-001	ASA.P7	A24DM1	CABLE ASSY,FLUIDICS CAS MTRS,W116	
W116.2	215-2991-001	ASA.P7	A24DP1	CABLE ASSY,FLUIDICS CAS MTRS,W116	
W116.3	215-2991-001	ASA.P7	A24EM2	CABLE ASSY,FLUIDICS CAS MTRS,W116	
W116.4	215-2991-001	ASA.P7	A24EP2	CABLE ASSY,FLUIDICS CAS MTRS,W116	
W117	215-2990-001	ASA.P4	A24GP1	CABLE ASSY,FLUIDICS OPS,W117	
W118	215-1118-001	ASA.P11	AS8SV1	CABLE ASSY,VIT DRV VALVE,W118	
W121	215-2857-001	A7P17	A18.FAN	CABLE ASSY,FAN W121	
W122	215-1122-001	A7P12	A12P1	CABLE ASSY,REL MFO,LEFT W122	
W123	215-1123-001	A7P10	A13P1	CABLE ASSY,REL MFO,RIGHT W123	
W126	215-2386-001	A3P1.B	A2P1	CABLE ASSY,USB DISPLAY,W126	
W127	215-1127-001	A7P4	A10P1	CABLE ASSY,PNEUMATIC PUMP W127	
W128	215-3005-001	A7P14	A4AP5	ASSY,CABLE,SERIAL W128	
W129.1	215-1129-001	A7P15	A19.FAN	CABLE ASSY,FANS,UPPER W129	
W129.2	215-1129-001	A7P18	A25.FAN	CABLE ASSY,FANS,UPPER W129	
W130.1	215-1130-001	A7P27	A9AT1	CABLE ASSY,BACKUP BATT PWR W130	
W130.2	215-1130-001	A7P27	A9AT2	CABLE ASSY,BACKUP BATT PWR W130	
W130.3	215-1130-001	A7P15	A9ATR1	CABLE ASSY,BACKUP BATT PWR W130	
W131.1	215-1131-001	A7P26	A9BT1	CABLE ASSY,BACKUP BATT PWR W131	
W131.2	215-1131-001	A7P26	A9BT2	CABLE ASSY,BACKUP BATT PWR W131	
W131.3	215-1131-001	A7P24	A9BTR1	CABLE ASSY,BACKUP BATT PWR W131	
W132	215-1132-001	ASA.P10	AS8P1	CABLE ASSY,VIT DRV SENSE W132	
W133.1	215-1133-001	A7P8	A28SENS1	CABLE ASSY,MAIN MANIFOLD W133	
W133.2	215-1133-001	A7P8	A28SV1	CABLE ASSY,MAIN MANIFOLD W133	
W133.3	215-1133-001	A7P8	A28SV2	CABLE ASSY,MAIN MANIFOLD W133	
W133.4	215-1133-001	A7P8	A28SV3	CABLE ASSY,MAIN MANIFOLD W133	
W136	215-2998-001	A3AP2	A3AP4	ASSY,CABLE,SATA,STRAIGHT TO R/A	
W137.1	215-1137-001	A24GP5	A24FLED2	CABLE ASSY,LED W137	
W137.2	215-1137-001	A24GP5	A24FLED1	CABLE ASSY,LED W137	
W138.1	215-3219-001	A24GP9	A24FLD1	ASSY,CABLE,LASER W138	215-1146-001 ALTERNATE W138 CABLE
W138.2	215-3219-001	A24GP9	A24FLD2	ASSY,CABLE,LASER W138	215-1146-001 ALTERNATE W138 CABLE
W140.1	215-2957-501	A6BP3	A6AP9	CABLE ASSY,LVS HP,W140	
W140.2	215-2957-501	A6BP3	A6AP6	CABLE ASSY,LVS HP,W140	
W143	215-1143-001	A28P1	A28P1	CABLE ASSY,SVS VALVE W143	
W144	215-2932-001	J1LS3	LS3LS3	CABLE ASSY,SUB W/DOZER,W144	
W145.1	215-1145-001	ASA.P15	AS8E1	ASSY,CABLE,COAG H/P CONN W145/W161	
W145.2	215-1145-001	ASA.P15	AS8E2	ASSY,CABLE,COAG H/P CONN W145/W161	
W148	215-1148-001	A21GND	CHASSIS_IGNDND	CABLE ASSY,PWR ENTRY GND W148	
W151	023-139	A21P1	PSP1	CABLE,HOSPITAL GRADE,NEMA 5/15	
W152	023-144	A7AP1	A7AP1	CABLE ASSY,MMCX FM609,4MM	
W153	023-144	A7AP4	ANT2	CABLE ASSY,MMCX FM609,4MM	
W154	215-2956-001	A4AC1	CHASSIS_2GNDND	CABLE ASSY,GROUND STRAP W154	
W155	215-2498-001	A7P9	A16P1	CABLE ASSY,BTRY TEST LOAD W155	
W159	023-166	A1P9	A7P19	CABLE,ETHERNET,8 COND 25.5IN	

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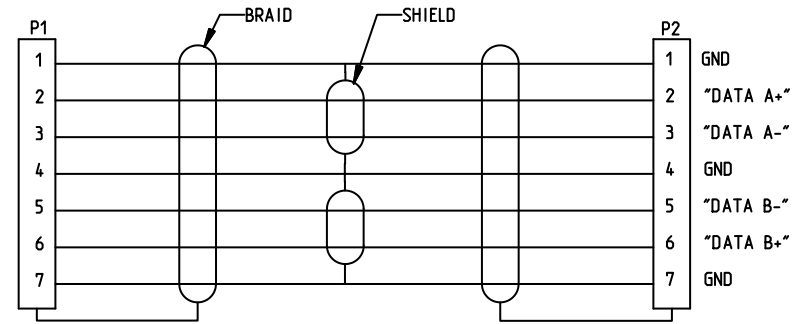
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		FROM	TO		
		MODULE/CONNECTOR	MODULE/CONNECTOR		
W160	215-3092-001	ASAP14	AS8E3	CABLE ASSY,FRONT LIGHT,W160	
W164	023-101	A3P10.B	A1AP10	CABLE,ETHERNET,8 COND 1.0M	
W165	215-2933-001	A7P30	FLS3	CABLE ASSY,SUB W/DOZER,W165	
W167	215-2960-001	A7M1	K7MB	CABLE ASSY,FAN,MFO W167	
W171.1	215-2131-001	A7P5	A17M1	MOTOR ASSY,1/V POLE,W/BRAKE	
W171.2	215-2131-001	A7P5	A17BK	MOTOR ASSY,1/V POLE,W/BRAKE	
W171.3	215-2131-001	A7P5	A17RA	MOTOR ASSY,1/V POLE,W/BRAKE	
W172.1	215-2462-001	A7P23	A17CR1	CABLE ASSY,HM SNS 1V POLE W172	
W172.2	215-2462-001	A7P23	A17CR2	CABLE ASSY,HM SNS 1V POLE W172	
W172.3	215-2462-001	A7P23	A17CR3	CABLE ASSY,HM SNS 1V POLE W172	
W180	215-2180-001	A24B.J1	A24BM1	ASSY,MOTOR,CASSETTE LATCH	
W181	215-2982-001	A11GND	CHASSIS_2GNDND	CABLE ASSY,GROUND STRAP W181	
W182	215-2984-001	ASAP1	ASAP10	CABLE ASSY,FAN,LVS W182	
W183	021-014	A4BP1	A4AWLAN.A	CABLE ASSY,COAX U FL CONN 150MM	
W184	021-014	A4BP2	A4AWLAN.B	CABLE ASSY,COAX U FL CONN 150MM	
W189.1	215-3473-001	A6AP4	A6BP1	CABLE ASSY,LVS CAFE HP TOP CRS	
W189.2	215-3473-001	A6AP8	A6BP1	CABLE ASSY,LVS CAFE HP TOP CRS	
W189.3	215-3473-001	A6AP17	A6BP1	CABLE ASSY,LVS CAFE HP TOP CRS	
W190.1	215-3474-001	A6AP5	A6BP2	CABLE ASSY,LVS CAFE HP MID CRS	
W190.2	215-3474-001	A6AP7	A6BP2	CABLE ASSY,LVS CAFE HP MID CRS	
W190.3	215-3474-001	A6AP18	A6BP2	CABLE ASSY,LVS CAFE HP MID CRS	



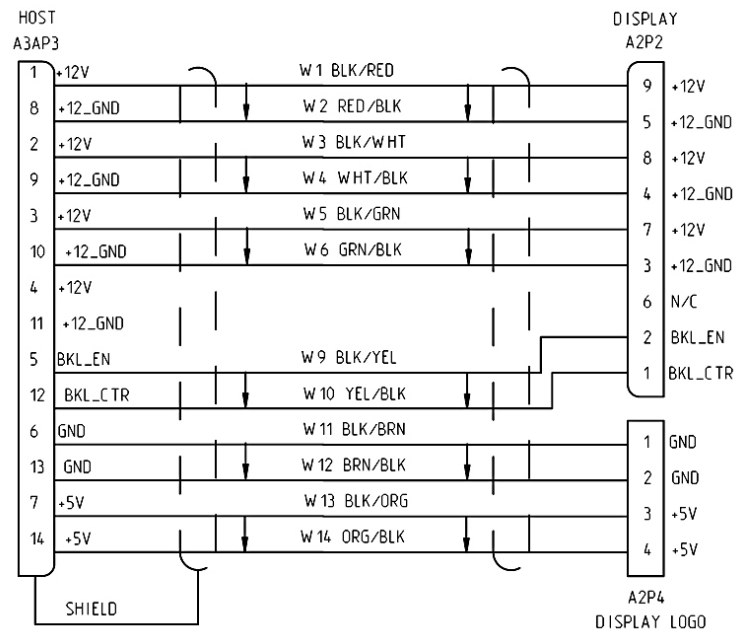
W101 - 24V PWR BK PLN

215-1101-001 A



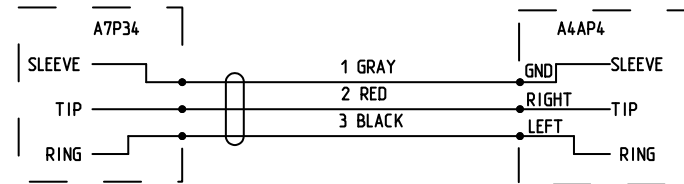
W102 - EXTERNAL SATA 24"

023-163 A



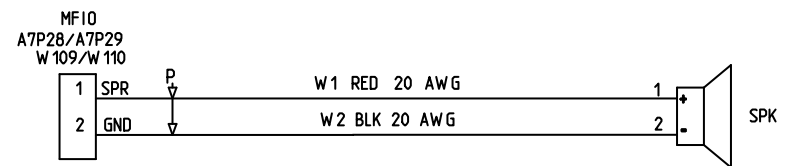
W103 - POWER, DISPLAY

215-1103-001 B



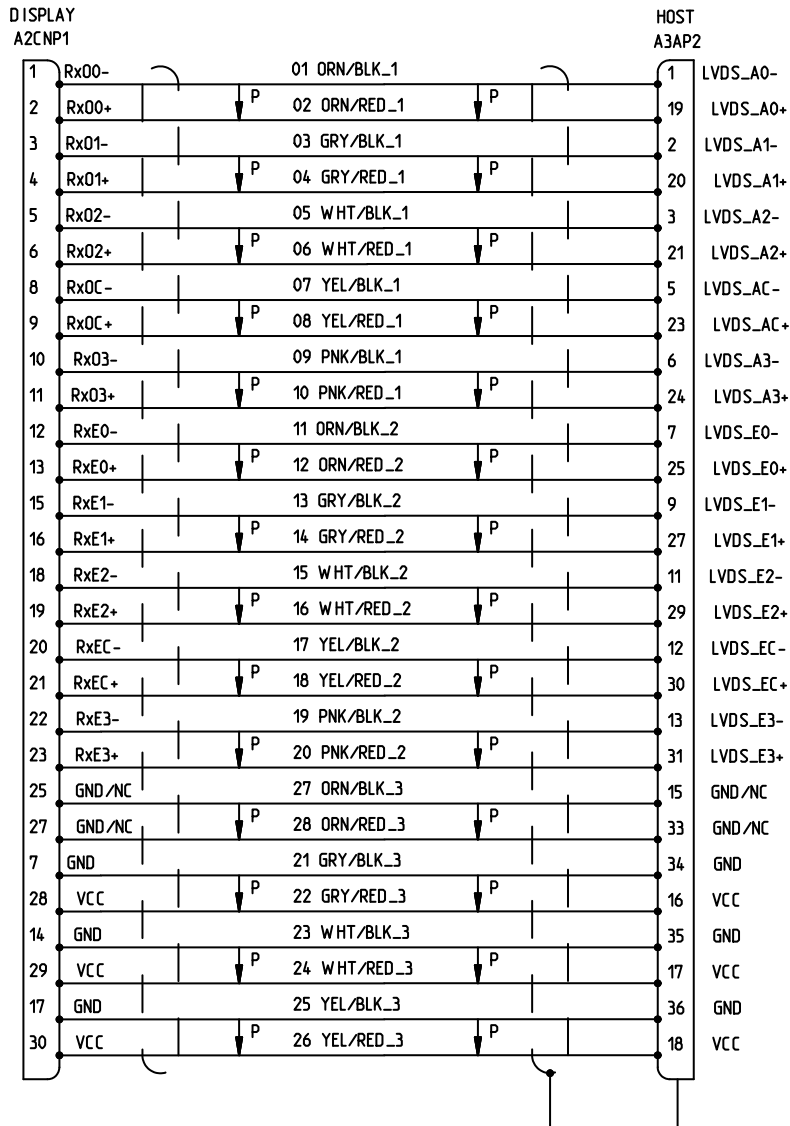
W105 - AUDIO EXT

215-1105-001 A



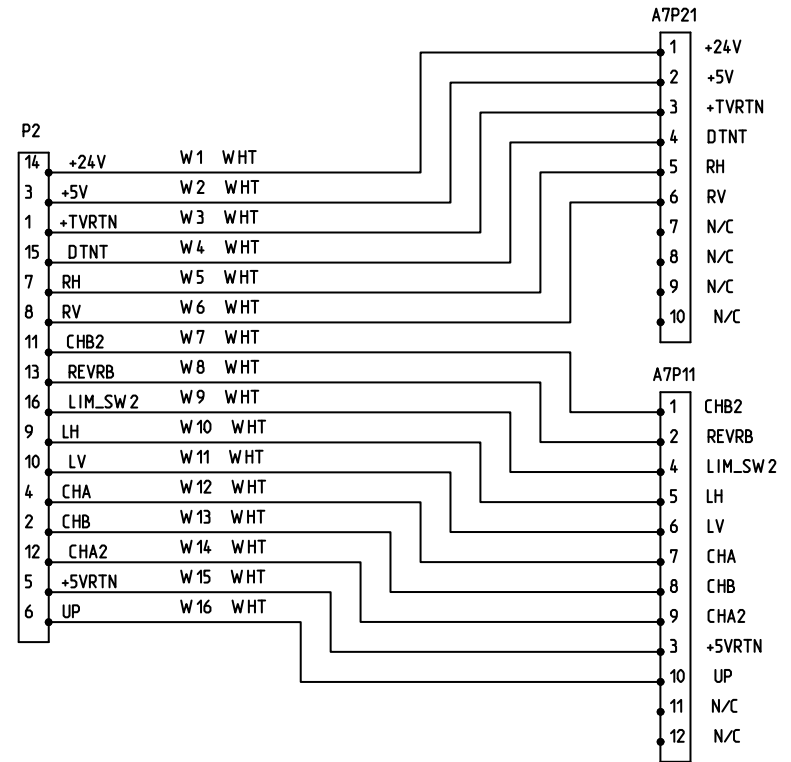
W109 W110 - SPEAKER

215-1110-001 A



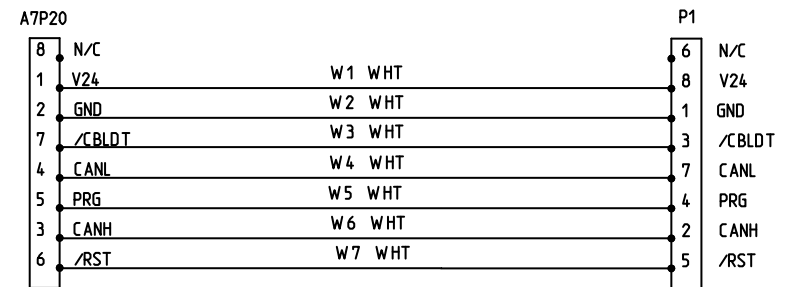
W104 - VIDEO, DISPLAY

215-1104-001 A



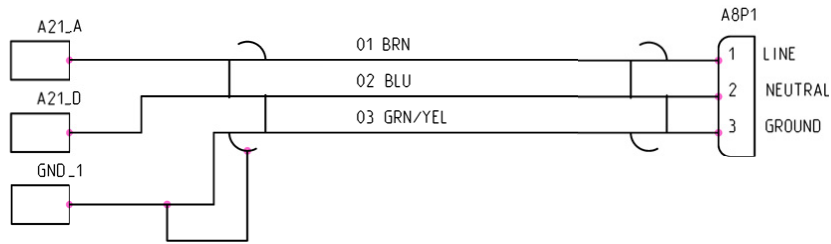
W107 - FTSW, STD INTF

215-1107-001 A



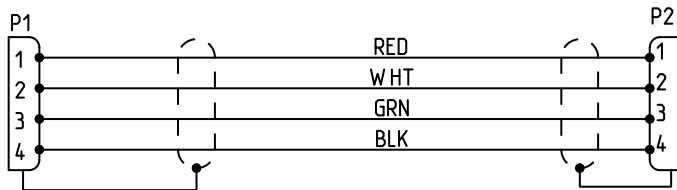
W108 - ADV INTF

215-1108-001 A



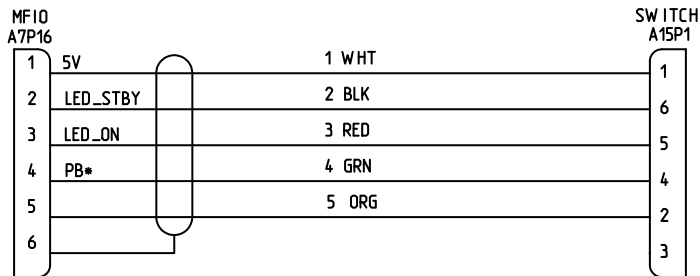
W111 - POWER ENTRY

215-3002-001 B



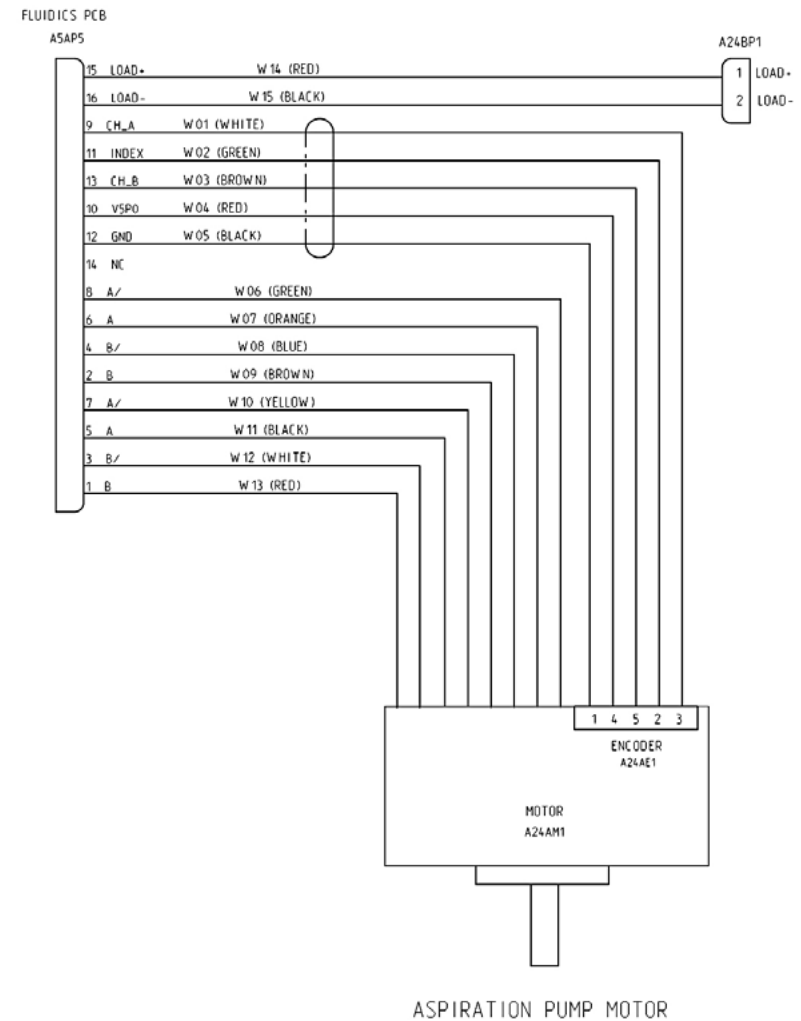
W112 - USB 2.0, A PLUG 1M

023-167 A



W113 - STANDBY SWITCH

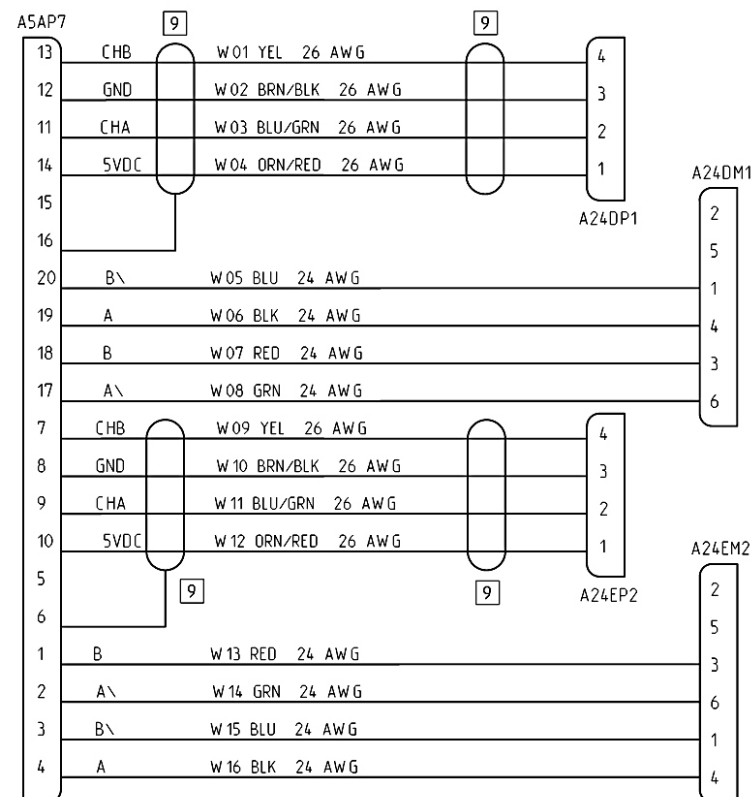
215-1113-001 A



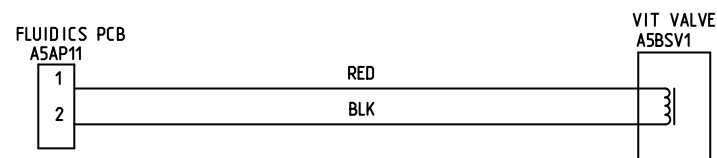
W114 - FLUIDICS MOTOR

215-2997-001 C

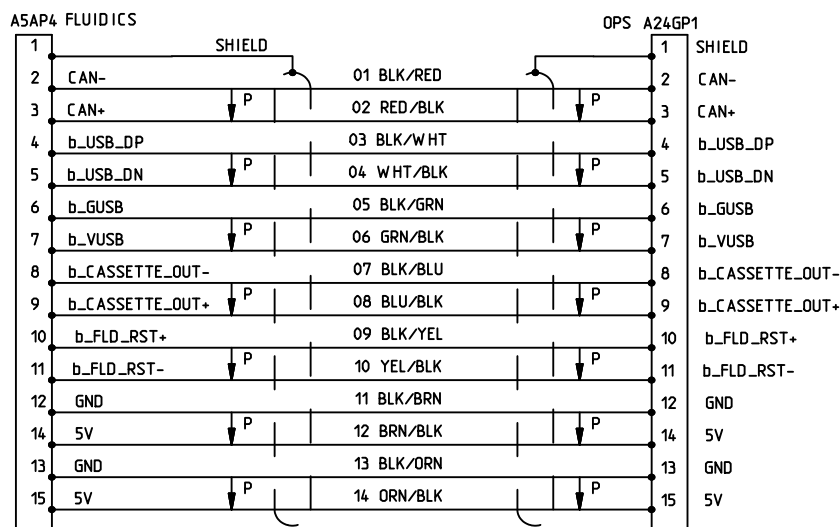
215-3232-001 B



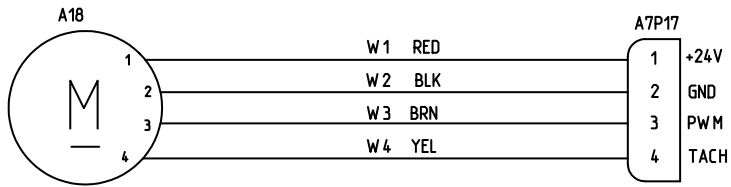
215-2991-001 C



215-1118-001 A



215-2990-001 A



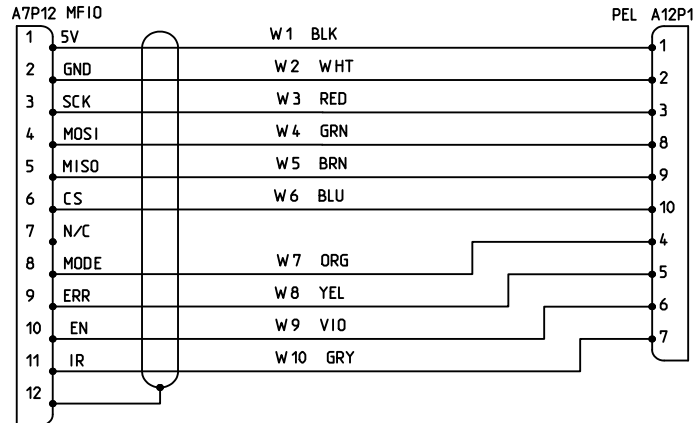
W121 - FAN

215-2857-001 A



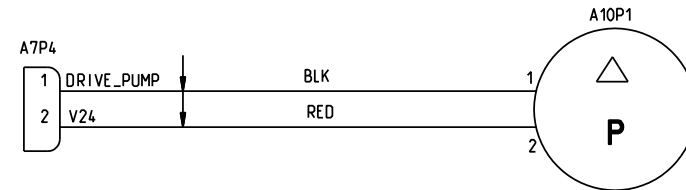
W126 - USB DISPLAY

215-2386-001 A



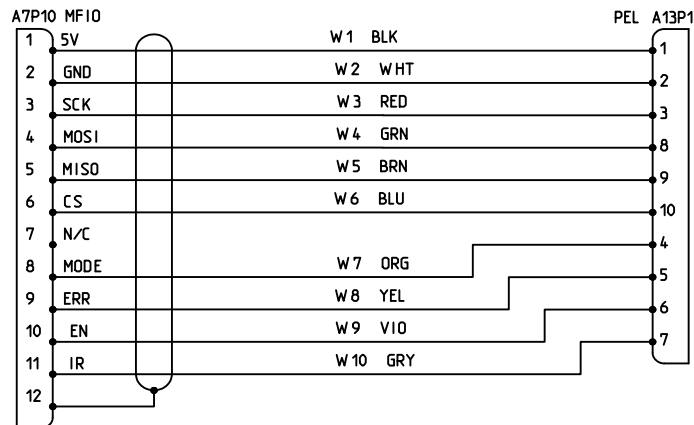
W122 - PEL MFIO, LEFT

215-1122-001 A



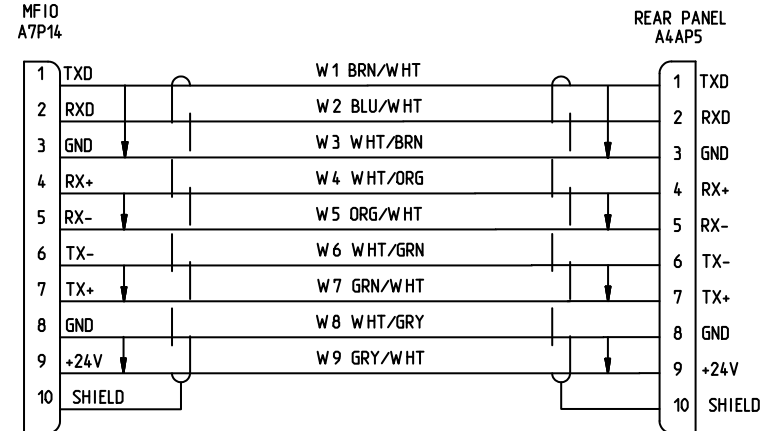
W127 - PNEUMATIC PUMP

215-1127-001 A



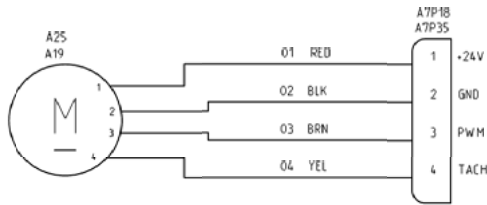
W123 - PEL MFIO, RIGHT

215-1123-001 A



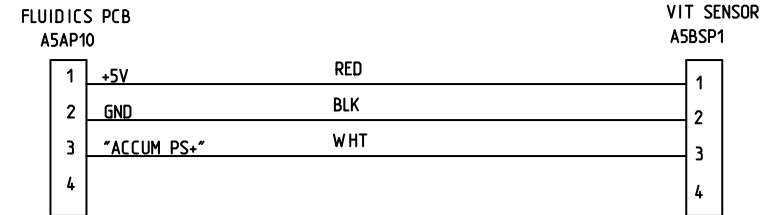
W128 - SERIAL

215-3005-001 A



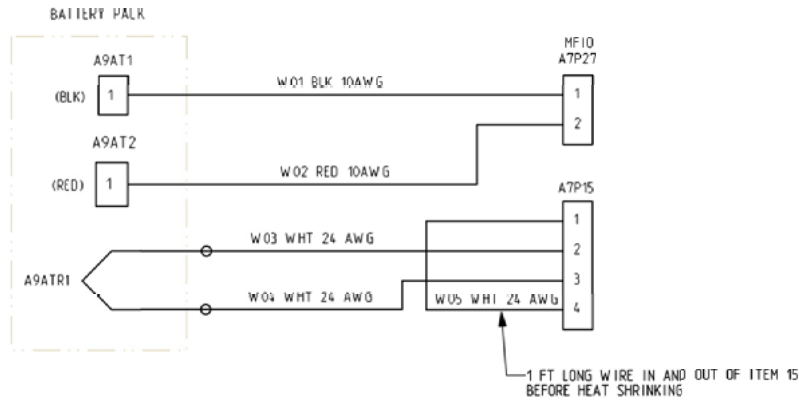
W129 - FANS, UPPER

215-1129-001 B



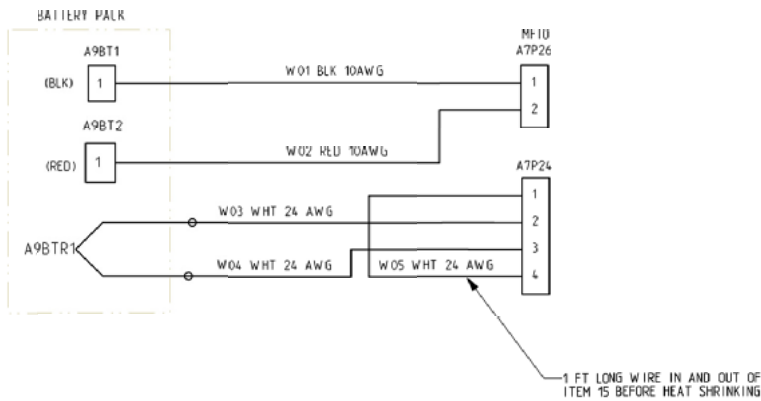
W132 - VIT DRV SENSE

215-1132-001 A



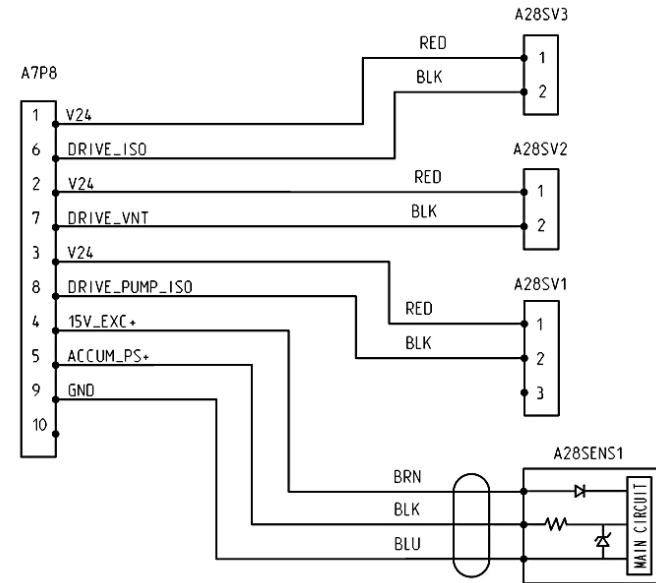
W130 - BACKUP BATT PWR

215-1130-001 B



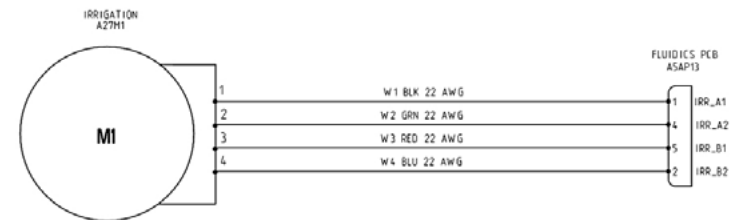
W131 - BACKUP BATT PWR

215-1131-001 B



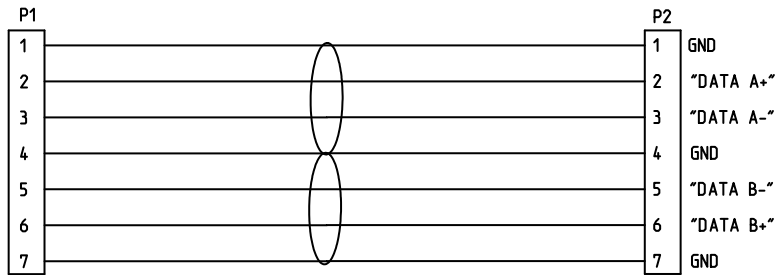
W133 - MAIN MANIFOLD

215-1133-001 B

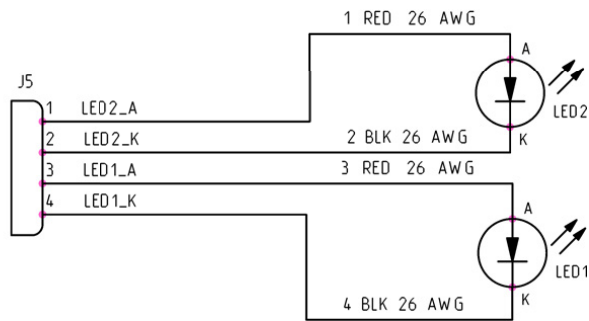


W134 - ACTIVE IRR

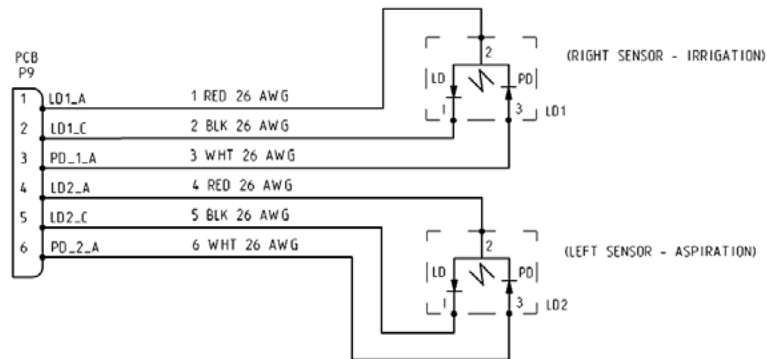
215-1819-001 C



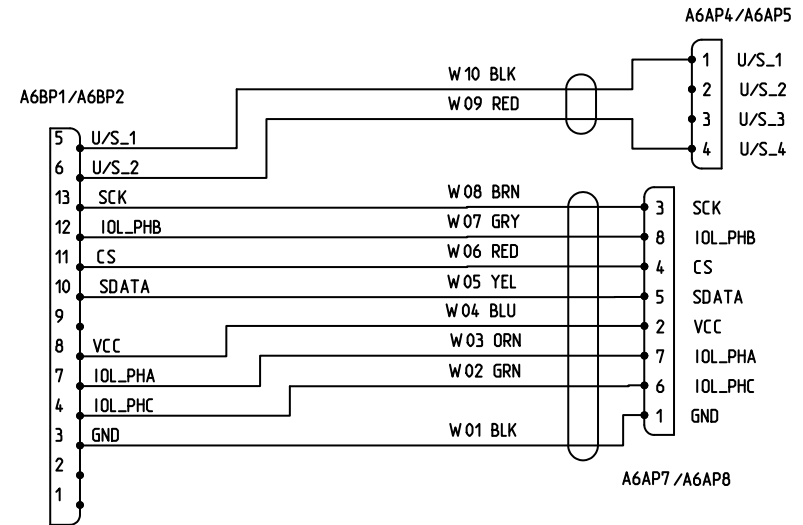
W136 - SATA, STRAIGHT TO R/A 215-2798-001 B



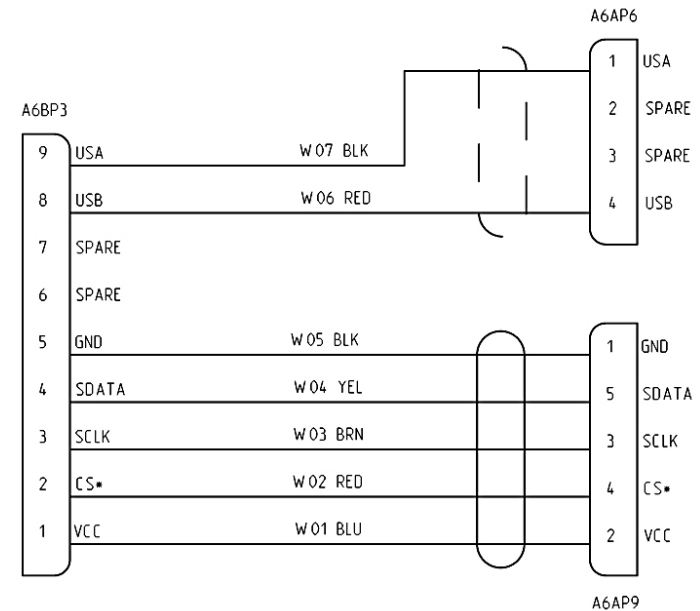
W137 - LED 215-1137-001 C



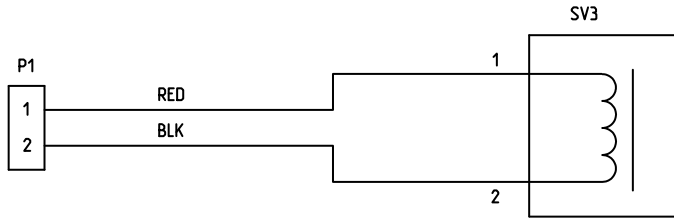
W138 - LASER 215-3219-001 A



W139 - U/S HP (Original) 215-2870-001 A

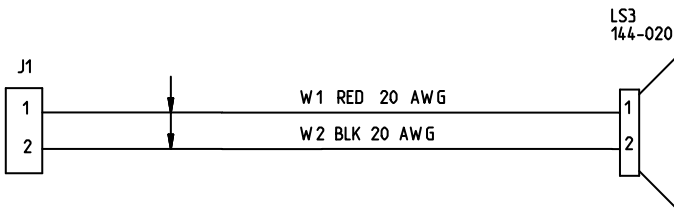


W140 - U/S HP 215-2957-501 D



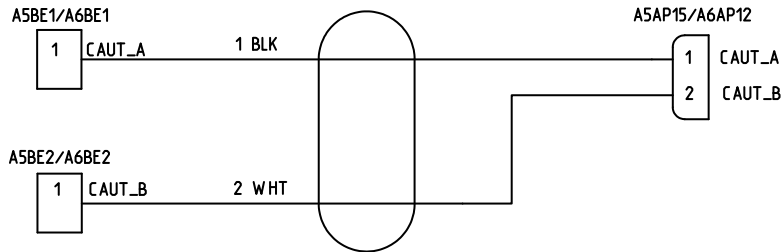
W143 - SV3 VALVE

215-1143-001 A



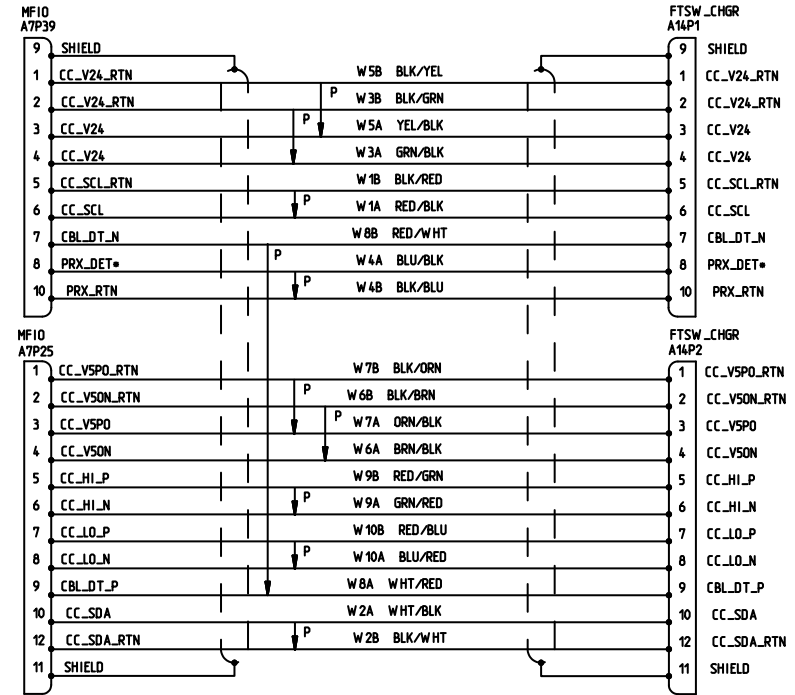
W144 - SUB WOOFER

215-2932-001 A



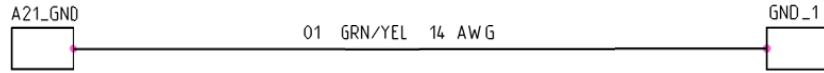
W145, W161 - COAG HP CONN

215-1145-001 A



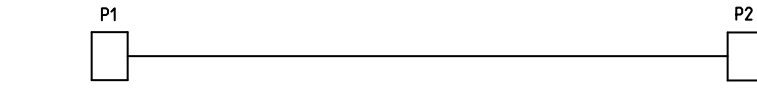
W147, FTSW CHGR

215-2778-001 A



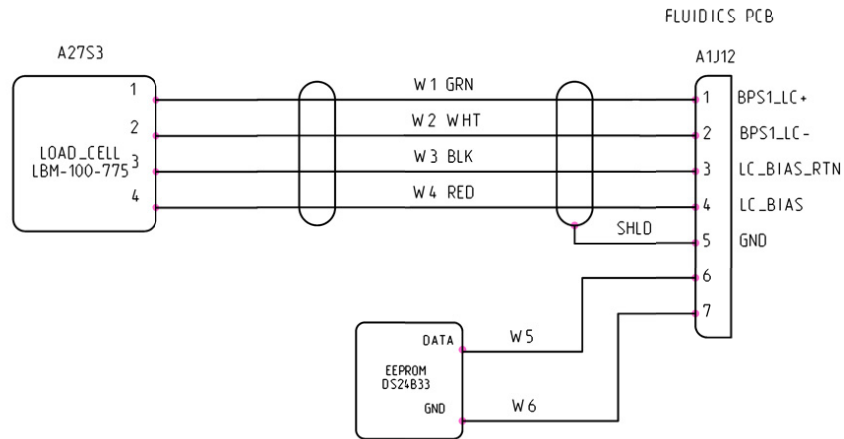
W148, PWR ENTRY GND

215-1148-001 B



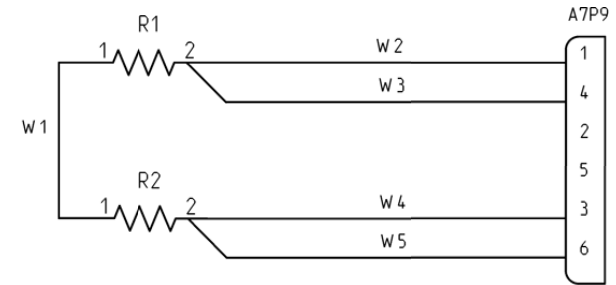
W154, GROUND STRAP

215-2956-001 A



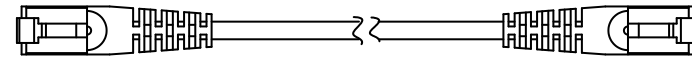
W150, ACT IRR LOAD

215-3344-001 A



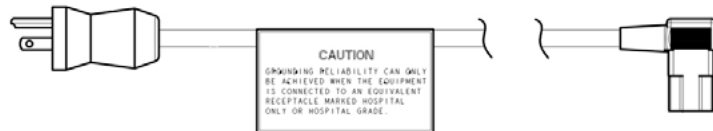
W155, BTRY TEST LOAD

215-2498-001 B



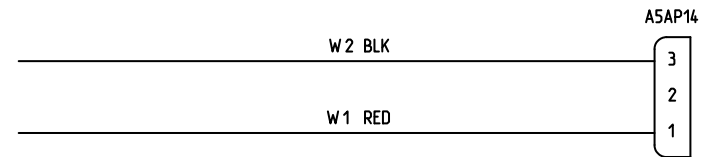
W159, ETHERNET, 8 COND 1.0M

023-166 A



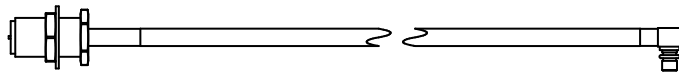
W151, HOSPITAL GRADE POWER CABLE

023-139 C



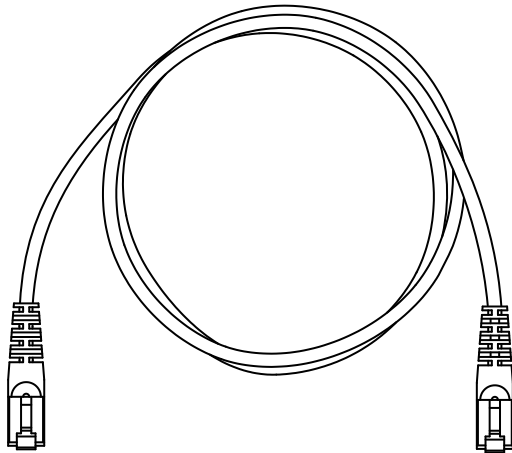
W160, FRONT LIGHT

215-3092-001 A

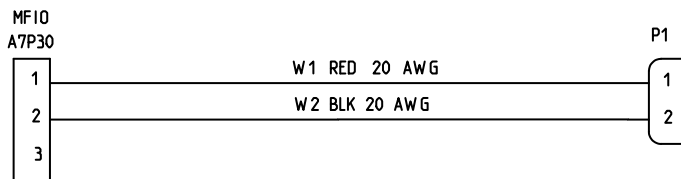


W152,153, RA-SMA JK RG178

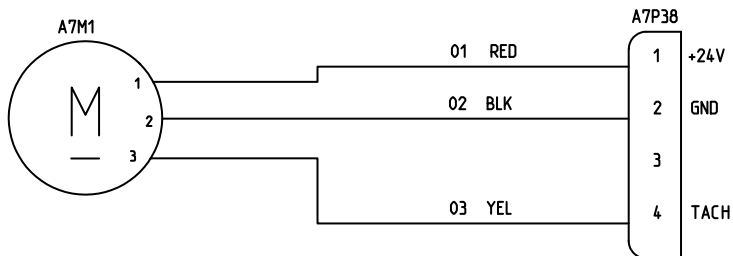
023-144 B



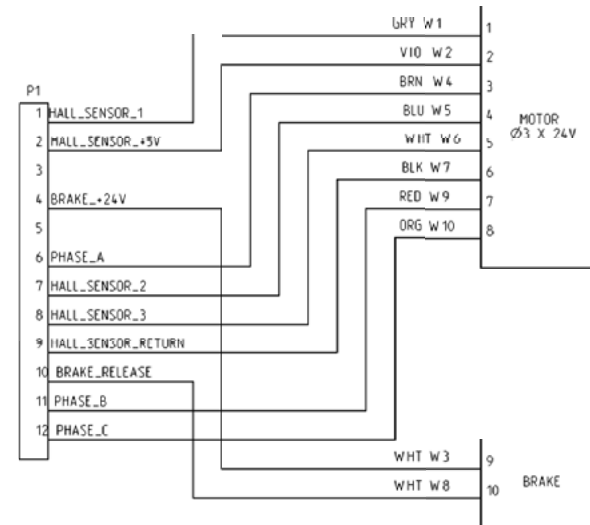
W164, ETHERNET, 8 COND 1.0M 023-101 A



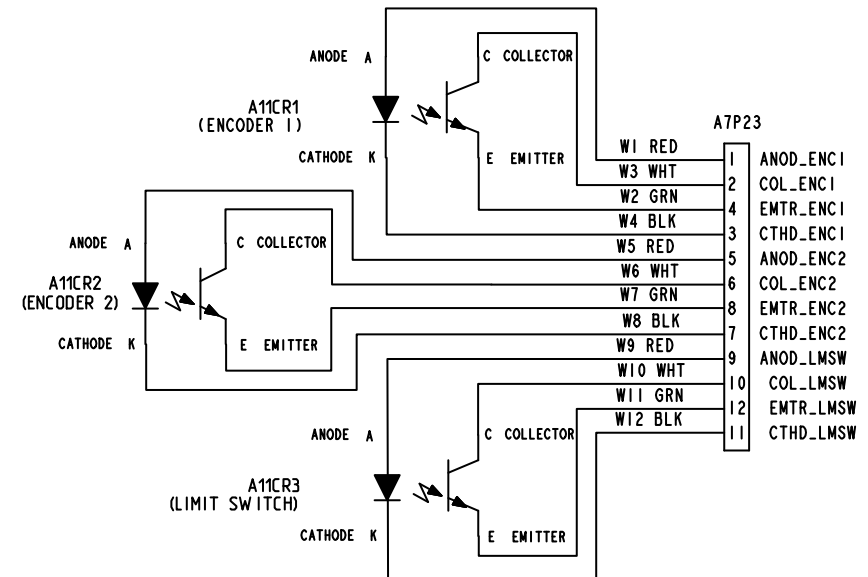
W165, SUB WOOFER 215-2933-001 A



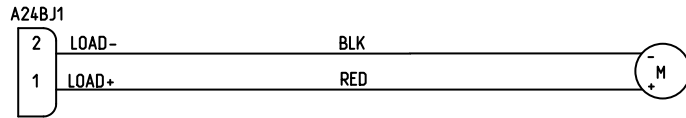
W167, FAN, MF10 215-2960-001 A



W171, MOTOR ASSY, I/V POLE, W/BRAKE 215-2131-001 A

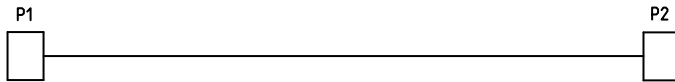


W172, HM SNS IV POLE 215-2462-001 A



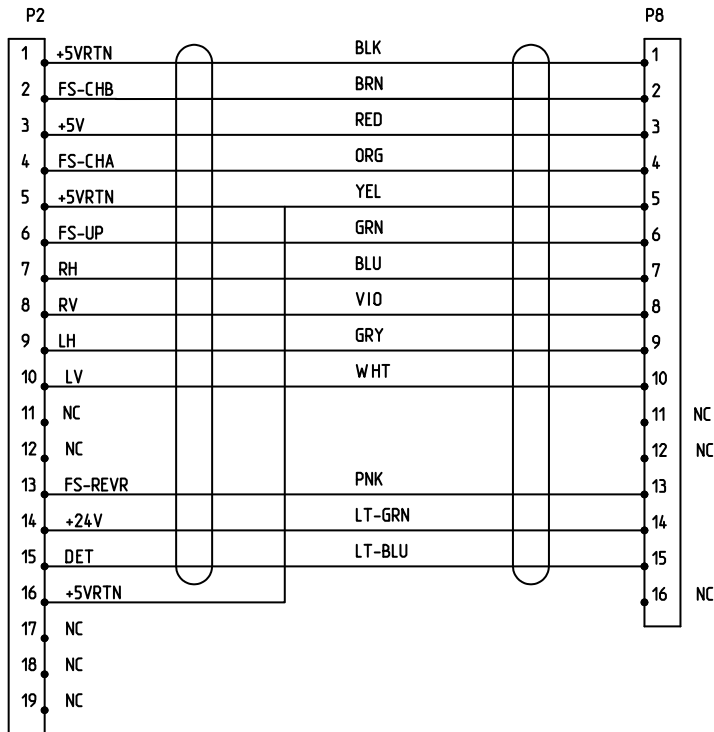
W180, CASSETTE LATCH

215-2180-001 A

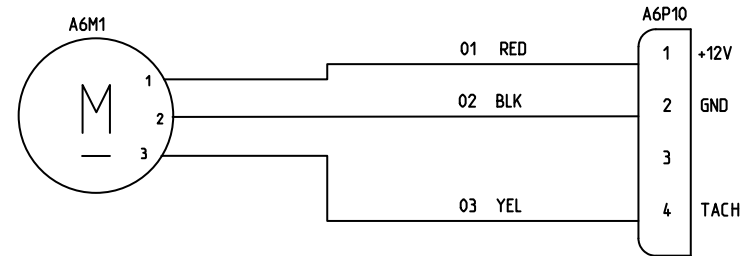


W181, GROUND STRAP

215-2982-001 A



W185, FOOT SWITCH

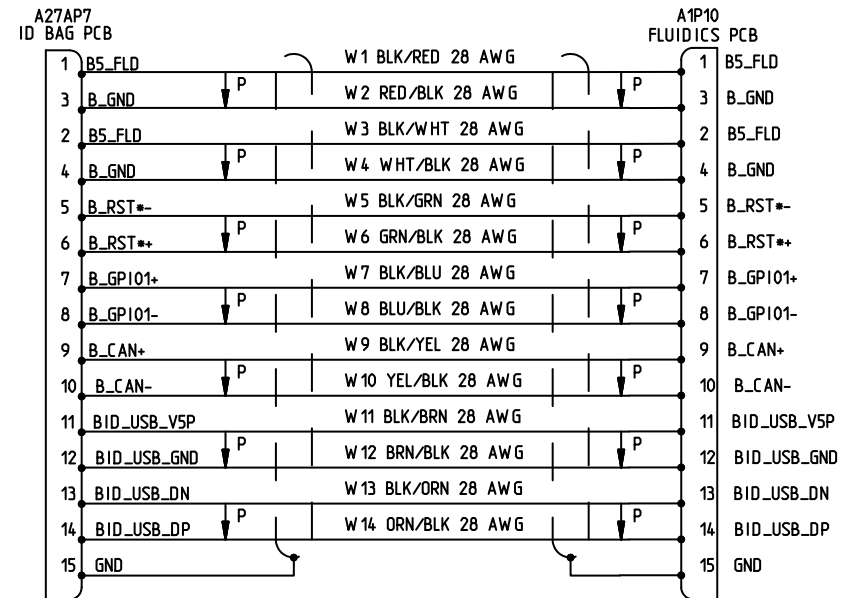


W182, FAN, US

215-2984-001 A

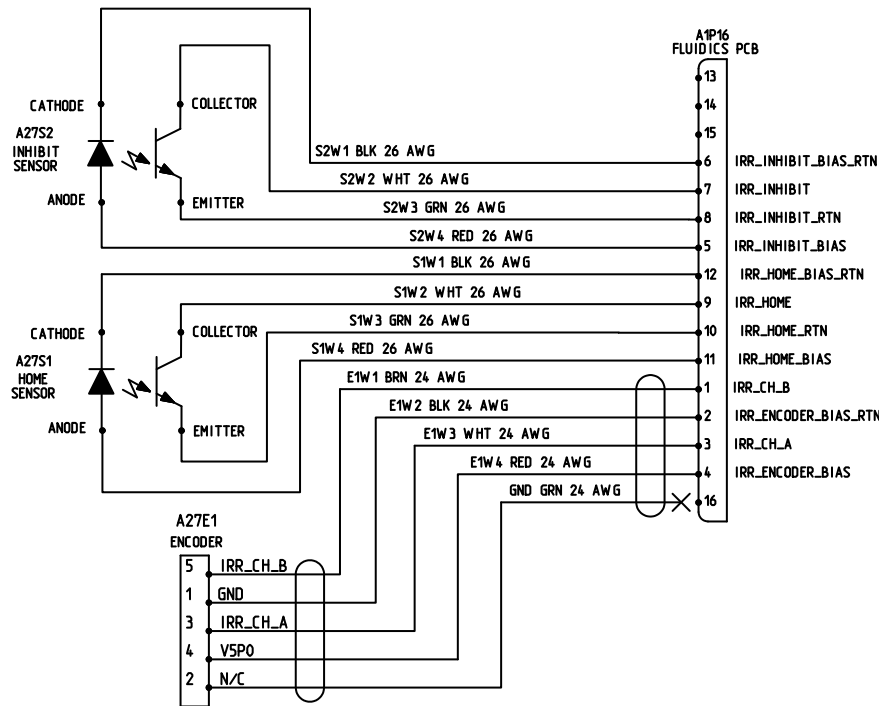


W183,184, COAX U FL CONN 150MM 021-014 A



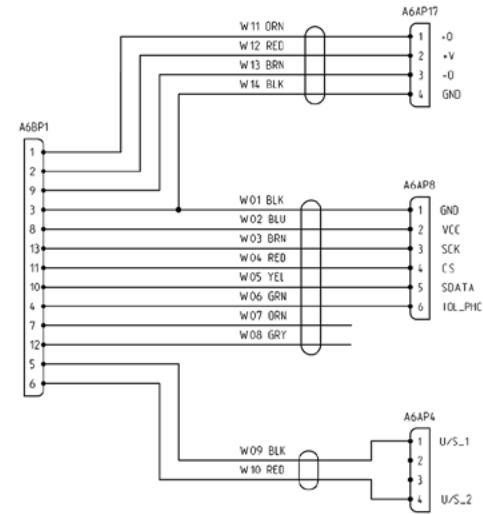
W186, BAG ID

215-3062-001 A



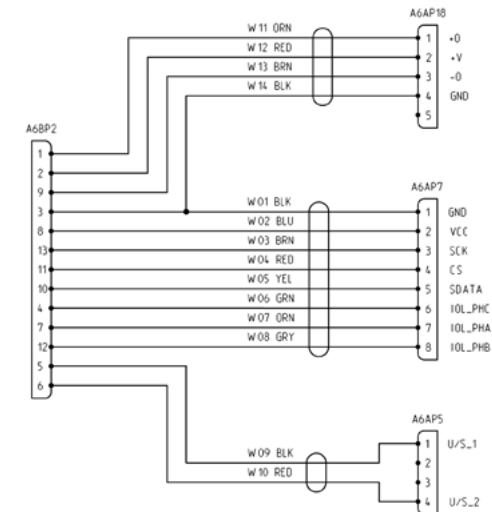
W187, ACTIVE IRR

215-3063-001 A



W189, U/S HP TOP (Silver & AS)

215-3473-001 B



W190, U/S HP MID (Silver & AS)

215-3474-001 C

SECTION SIX - PARTS LISTS AND DRAWINGS

CONTENTS	
DESCRIPTION	PART NUMBER*
Centurion* Console Assembly (Original)	215-0000-501 AB
Centurion* Silver Console Assembly	215-0000-504 G
Footswitch Assembly	215-1016-502 N
Global Footswitch Assembly	395-1201-XXX Y
Tray Arm Assembly (Original & AS)	215-1091-502 G
Tray Arm Assembly (Silver)	215-1091-503 B
Fluidics Assembly	215-1660-504 H
Fluidics Controller Assembly	215-1007-501 D
Active Irrigation Assembly	215-2736-501 G
Host Assembly (Advantech)	215-1008-002 C
Host Module Assembly	215-1100-502 C
Ultrasound Assembly (Original)	215-1009-501 L
Ultrasound Assembly (Silver & AS)	215-1009-503 C
* NOTE: Part numbers are for reference and may not be available as spare replacement parts.	

	6	5	4	3	2	1																																																																
	<p>NOTES: UNLESS OTHERWISE SPECIFIED</p> <ol style="list-style-type: none"> 1. INTERPRET THIS DRAWING PER ASME Y14.100-2004, ASME Y14.5-2009, AND ALCON SPECIFICATION 701-026. 2. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM. 3. MANUFACTURE PER MAP 992-2150-004. 4. THE 3D CAD CABLE INTERCONNECT FILE 215-0000-501_PROC_CABLE IS AN INTEGRAL FILE OF THIS DRAWING. SOME INSTALLED CABLE ASSEMBLIES ARE NOT SHOWN FOR CLARITY. ALL CABLE ROUTING AND FROM-TO CONNECTIONS CAN BE FOUND IN THIS FILE. 5. REFERENCE DESIGNATOR BREAKDOWN: W2: CABLE ID A1P1: CONNECTION T3 6. R NUMBERS IDENTIFY CABLE ROUTING AND TIE-WRAP LOCATIONS ASSOCIATED WITH CABLES. 7. REFERENCE INTERCONNECT DIAGRAM 215-0000-801. 8 PART NUMBER, REVISION LETTER AND SERIAL NUMBER OF CONSOLE MARKED APPROXIMATELY WHERE SHOWN. 9. DELETED 10. TEST PER MTP 907-2150-022. 					<p style="text-align: center;">REVISION HISTORY</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>ECN</th> <th>DATE</th> </tr> </thead> <tbody> <tr><td>C</td><td>CN047737ECN</td><td>08/29/13</td></tr> <tr><td>D</td><td>CN048215ECN</td><td>09/06/13</td></tr> <tr><td>E</td><td>CN050148ECN</td><td>11/13/13</td></tr> <tr><td>F</td><td>CN050898ECN</td><td>02/17/14</td></tr> <tr><td>G</td><td>CN054729ECN</td><td>05/02/14</td></tr> <tr><td>H</td><td>CN059957ECN</td><td>03/19/15</td></tr> <tr><td>J</td><td>CN061022ECN</td><td>04/01/15</td></tr> <tr><td>K</td><td>CN061254ECN</td><td>05/01/15</td></tr> <tr><td>L</td><td>CN062071ECN</td><td>07/08/15</td></tr> <tr><td>M</td><td>CN066082ECN</td><td>02/08/16</td></tr> <tr><td>N</td><td>CN066065ECN</td><td>03/17/16</td></tr> <tr><td>R</td><td>CN066944ECN</td><td>04/20/16</td></tr> <tr><td>T</td><td>CN068700ECN</td><td>11/07/16</td></tr> <tr><td>U</td><td>CN070228ECN</td><td>12/15/16</td></tr> <tr><td>V</td><td>CN070739ECN</td><td>04/05/17</td></tr> <tr><td>W</td><td>CN072267ECN</td><td>05/19/17</td></tr> <tr><td>X</td><td>CN072532ECN</td><td>06/16/17</td></tr> <tr><td>Y</td><td>CN073657ECN</td><td>09/26/17</td></tr> <tr><td>AA</td><td>CN077370ECN</td><td>03/28/18</td></tr> <tr><td>AB</td><td>CN078275ECN</td><td>20 APR 2018</td></tr> </tbody> </table>		REV	ECN	DATE	C	CN047737ECN	08/29/13	D	CN048215ECN	09/06/13	E	CN050148ECN	11/13/13	F	CN050898ECN	02/17/14	G	CN054729ECN	05/02/14	H	CN059957ECN	03/19/15	J	CN061022ECN	04/01/15	K	CN061254ECN	05/01/15	L	CN062071ECN	07/08/15	M	CN066082ECN	02/08/16	N	CN066065ECN	03/17/16	R	CN066944ECN	04/20/16	T	CN068700ECN	11/07/16	U	CN070228ECN	12/15/16	V	CN070739ECN	04/05/17	W	CN072267ECN	05/19/17	X	CN072532ECN	06/16/17	Y	CN073657ECN	09/26/17	AA	CN077370ECN	03/28/18	AB	CN078275ECN	20 APR 2018
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AB	CN078275ECN	20 APR 2018																																																																				
						<p>SEE SEPARATE PARTS LIST</p>																																																																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>QTY</th> <th>PART NUMBER</th> <th>DESCRIPTION</th> <th>MATERIAL/MANUFACTURER</th> <th>ITEM</th> </tr> </thead> <tbody> <tr> <td colspan="5" style="text-align: center;">BILL OF MATERIAL</td> </tr> <tr> <td>BY</td> <td>J. ATHERLEY</td> <td>DATE</td> <td>04/19/10</td> <td rowspan="4" style="text-align: center; vertical-align: middle;"> <small>Irvine, California 92618</small> </td> </tr> <tr> <td>CHECKED</td> <td>R. PALINO</td> <td>DATE</td> <td>04/19/10</td> </tr> <tr> <td>APPROVED</td> <td>L. NGUYEN</td> <td>DATE</td> <td>04/19/10</td> </tr> <tr> <td>FORMAT REVISION</td> <td colspan="3">2/23/2007</td> </tr> <tr> <td colspan="2">PDMLINK MODEL ATTRIBUTES</td> <td colspan="2">NAME: 215-0000-501_PROC</td> <td colspan="2">VERSION: AB.2</td> </tr> </tbody> </table>						QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM	BILL OF MATERIAL					BY	J. ATHERLEY	DATE	04/19/10	 <small>Irvine, California 92618</small>	CHECKED	R. PALINO	DATE	04/19/10	APPROVED	L. NGUYEN	DATE	04/19/10	FORMAT REVISION	2/23/2007			PDMLINK MODEL ATTRIBUTES		NAME: 215-0000-501_PROC		VERSION: AB.2																																
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DRAWING NUMBER 215-0000-501 REV AB

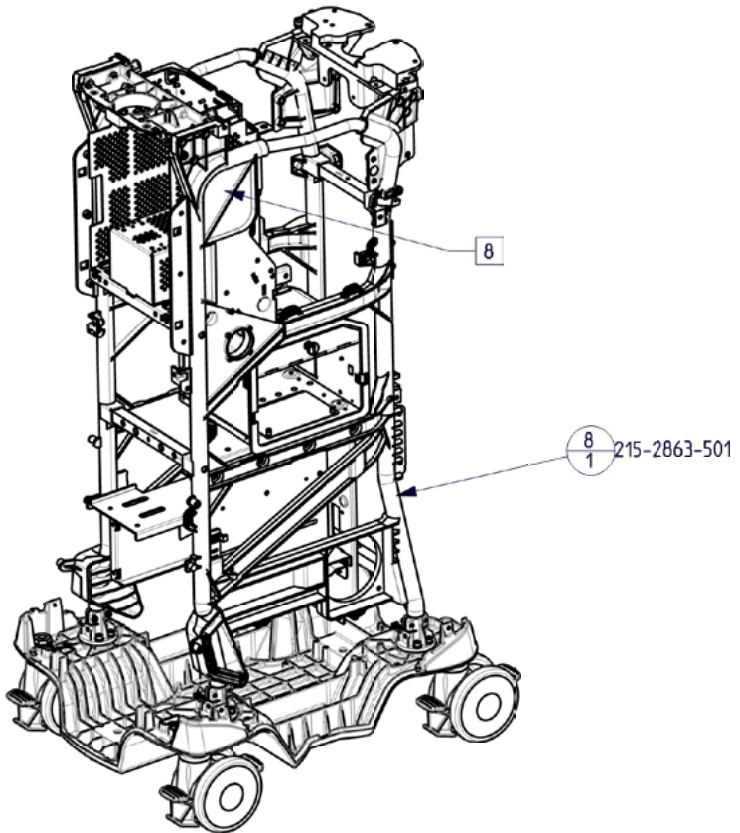
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D

C

B

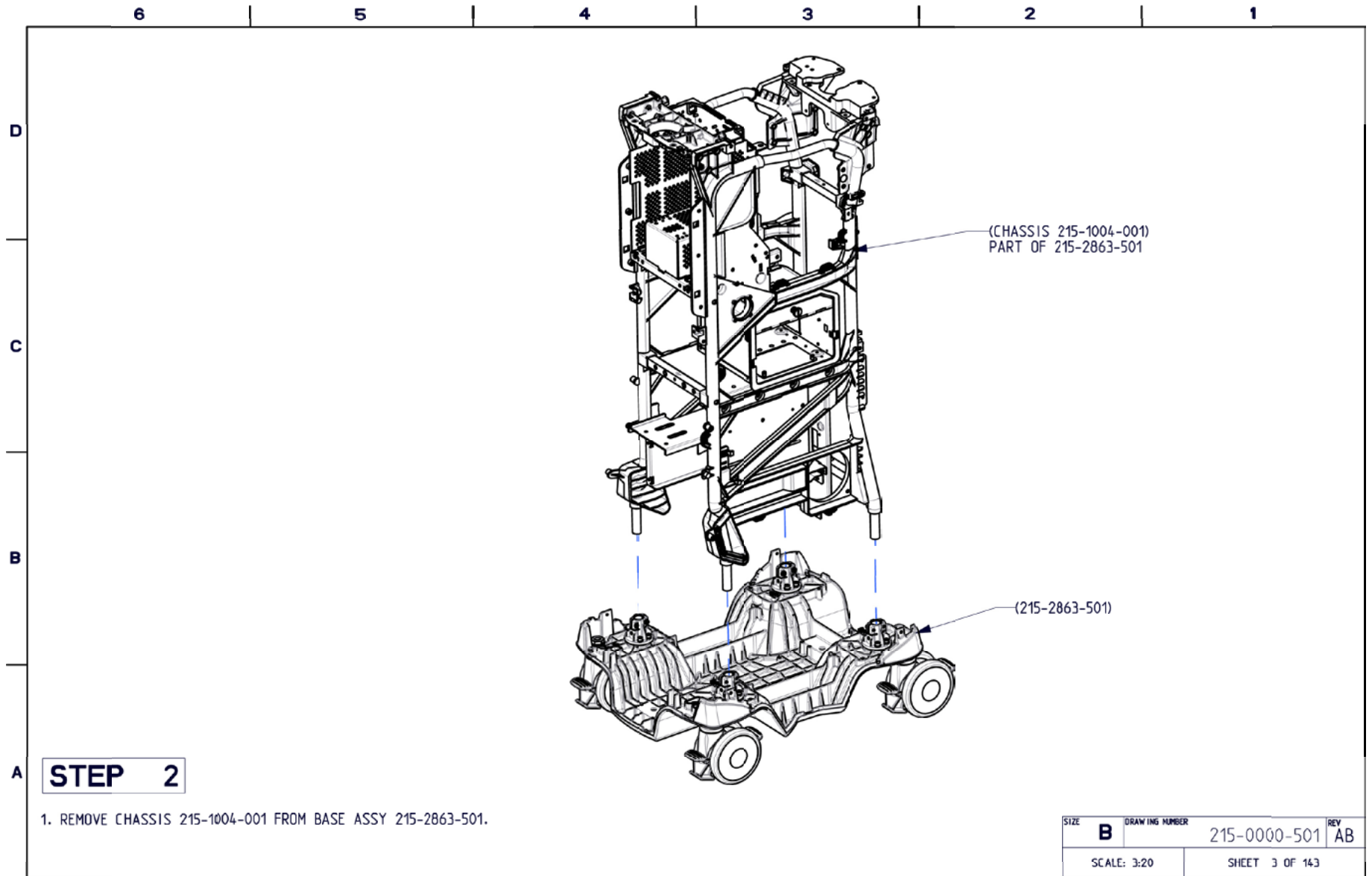
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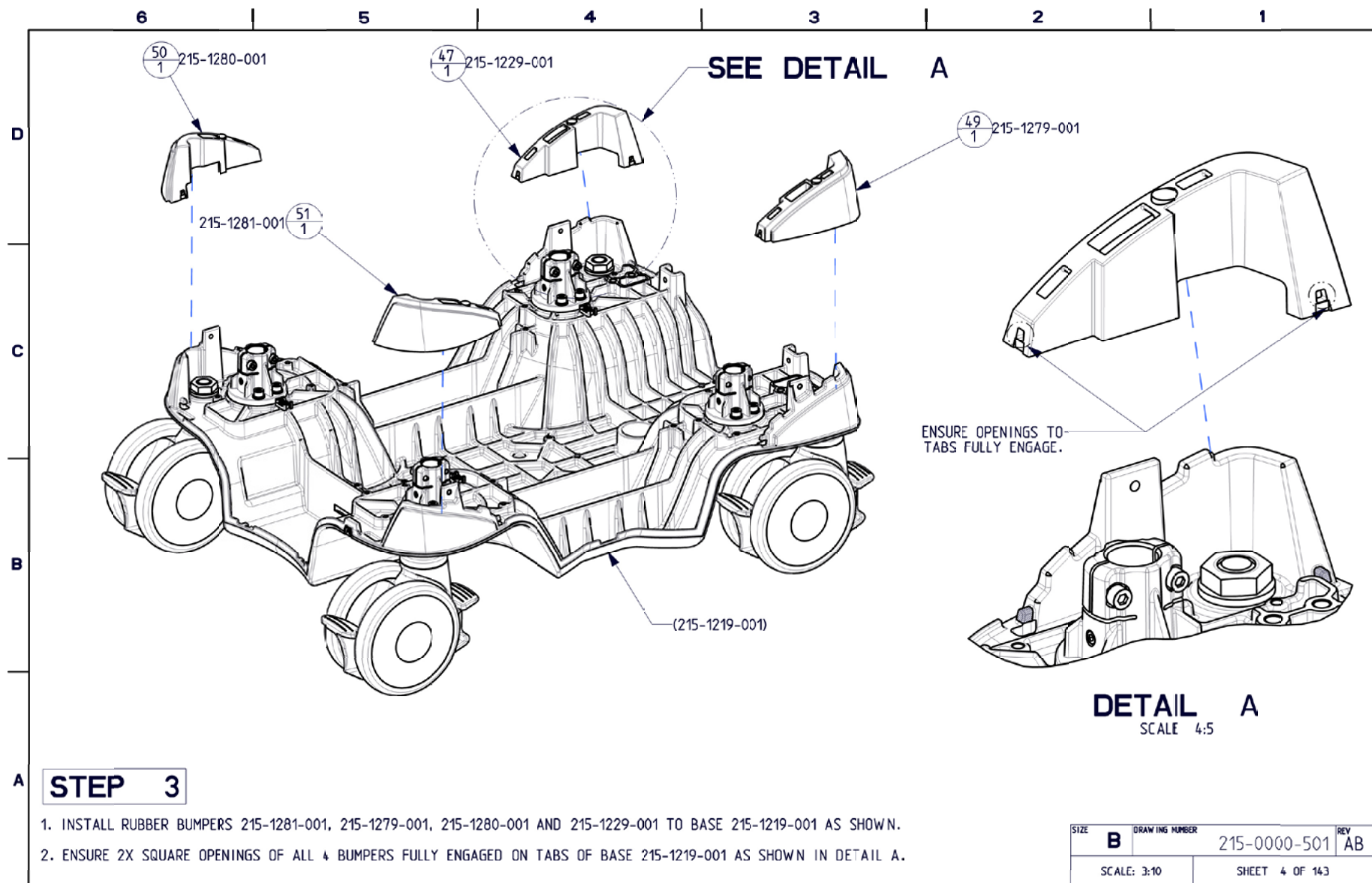


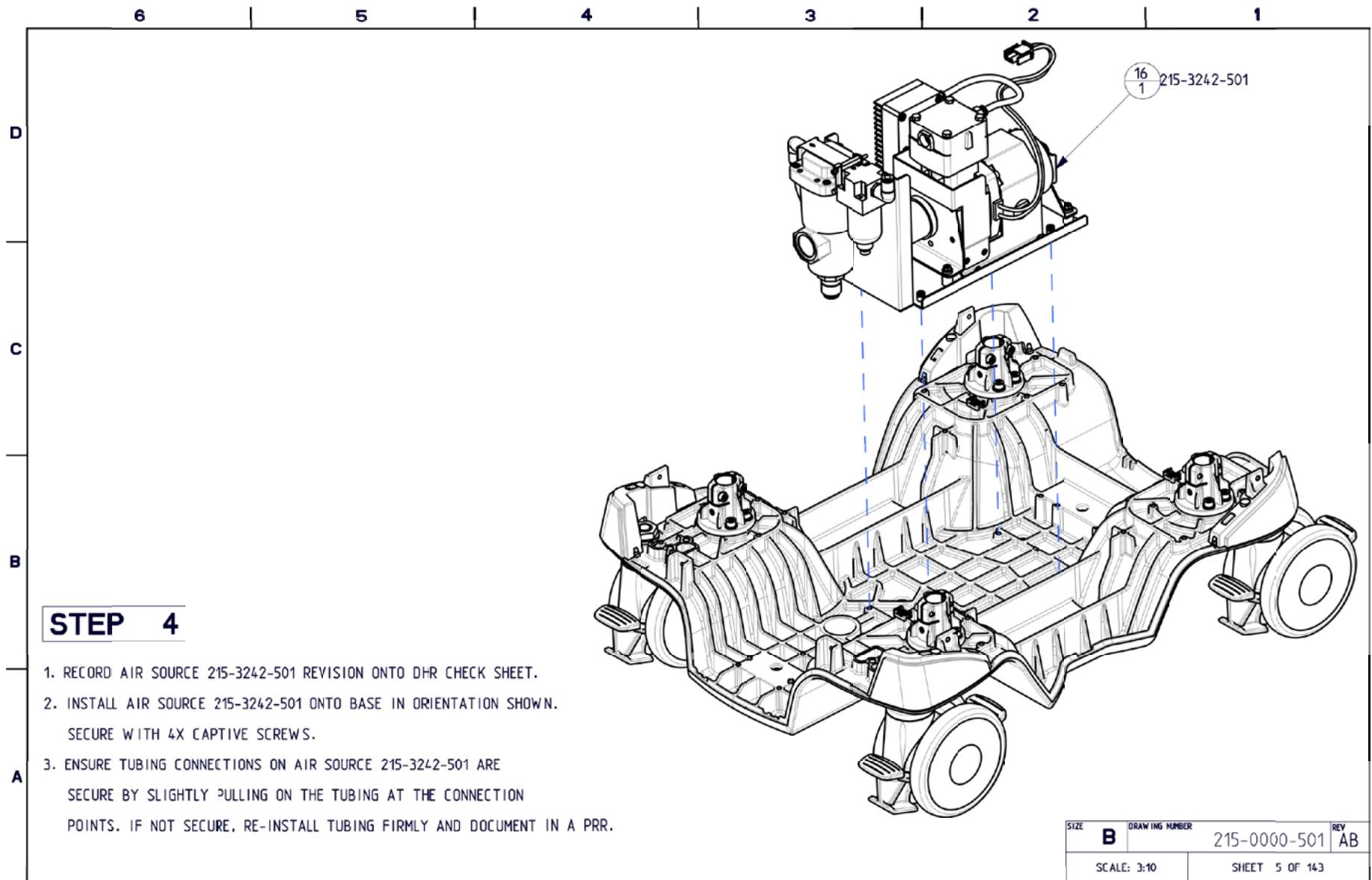
STEP 1

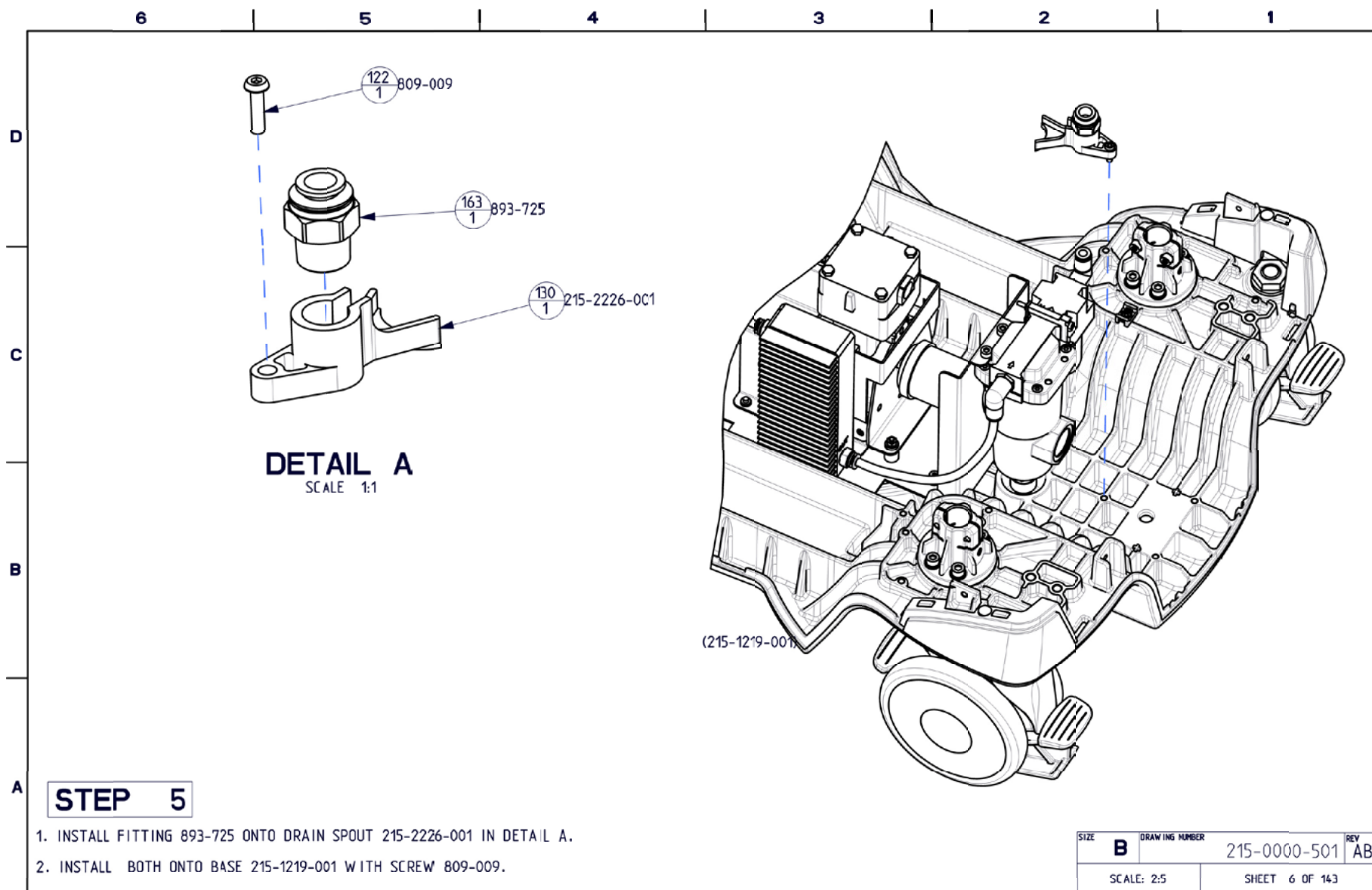
1. RECORD BASE ASSY 215-2863-501 REVISION ONTO DHR DATA SHEET.
2. REMOVE TAG FROM BASE ASSY 215-2863-501.
3. WITH A SILVER MARKER, MARK CONSOLE PART NUMBER, REVISION LETTER, AND SERIAL NUMBER
ON BASE ASSY 215-2863-501 IN APPROXIMATE LOCATION IDENTIFIED BY 8 ABOVE.

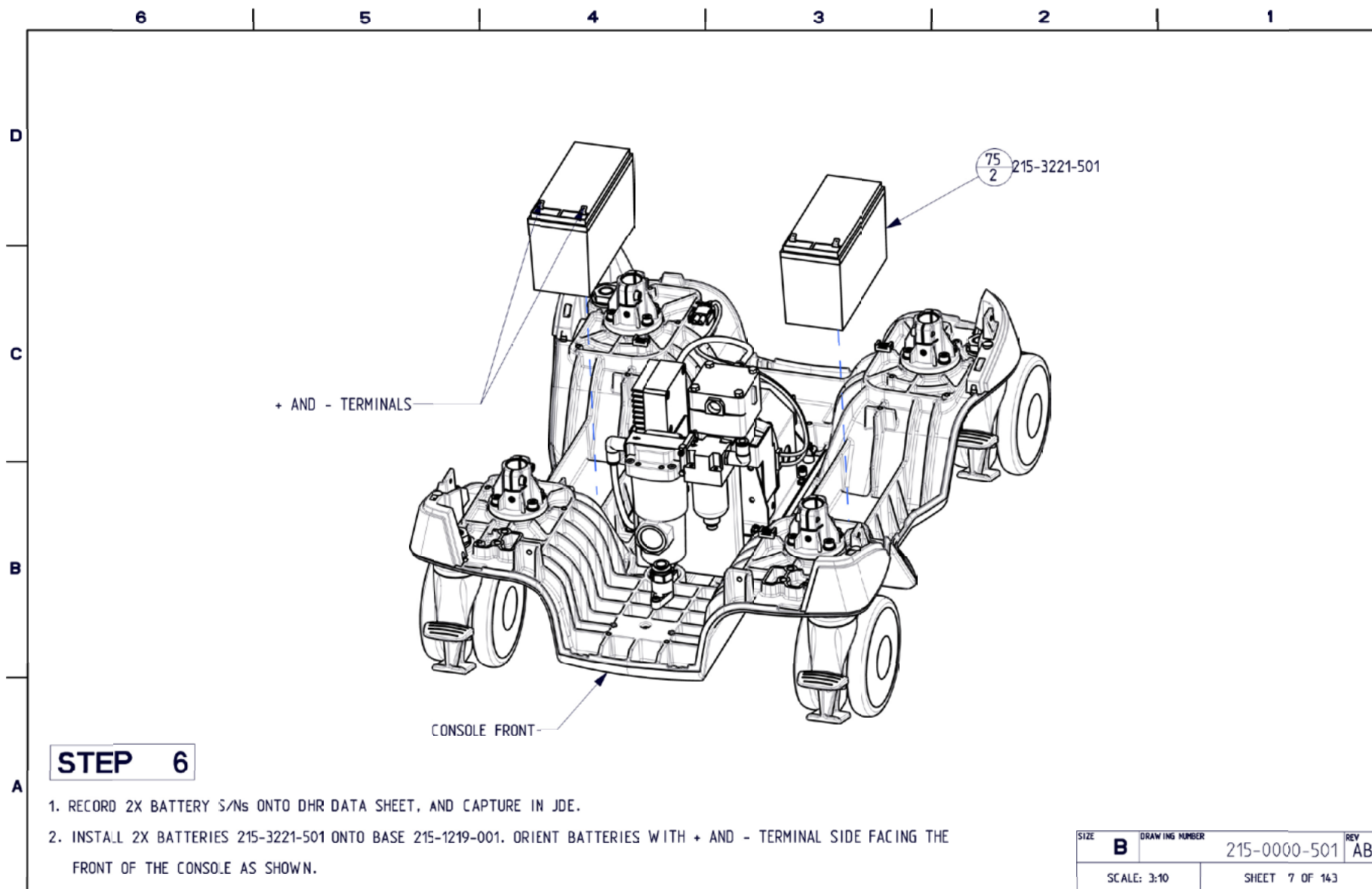
SIZE	B	DRAWING NUMBER	215-0000-501	REV	AB
SCALE: 3:20		SHEET 2 OF 143			

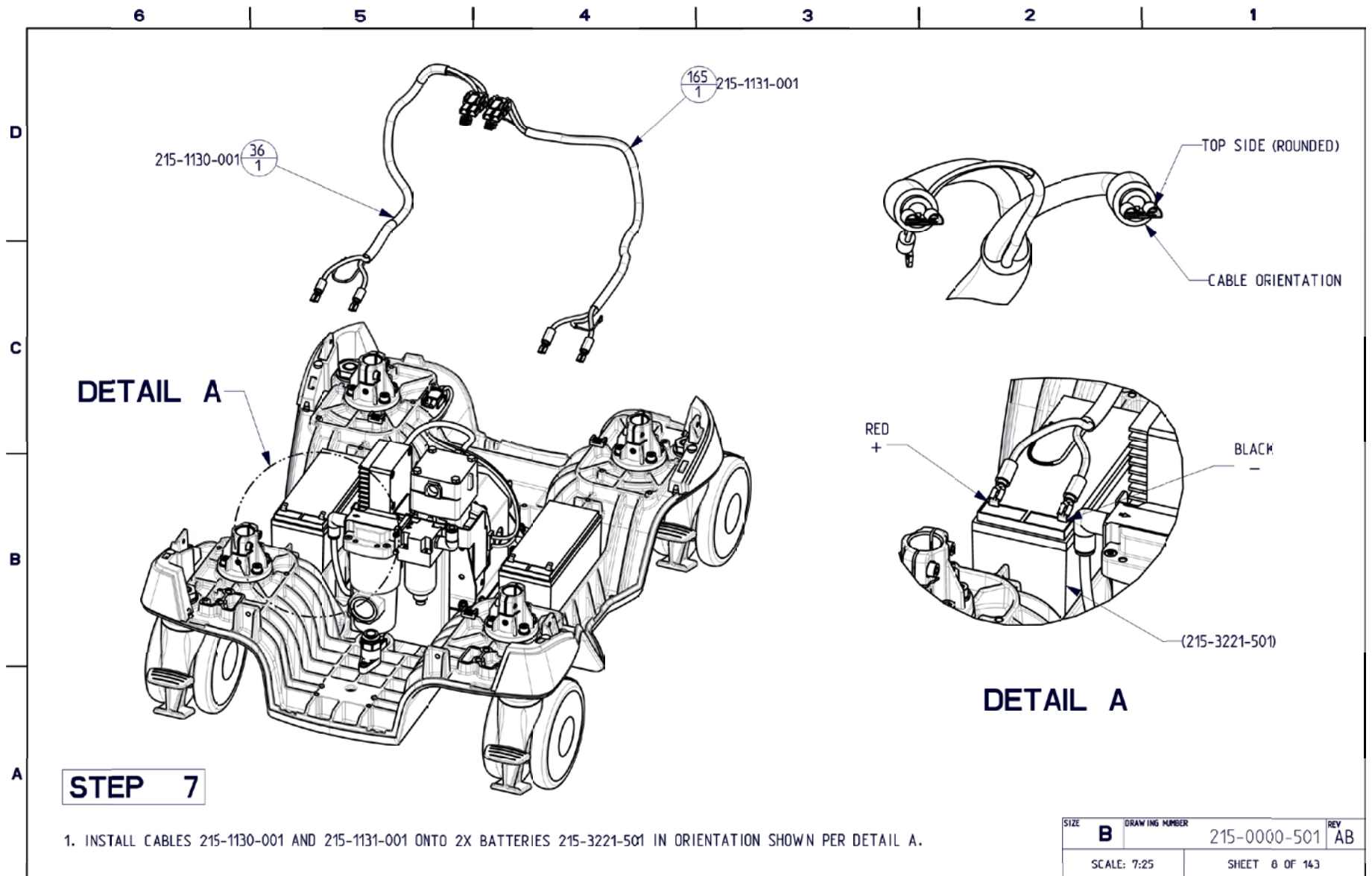


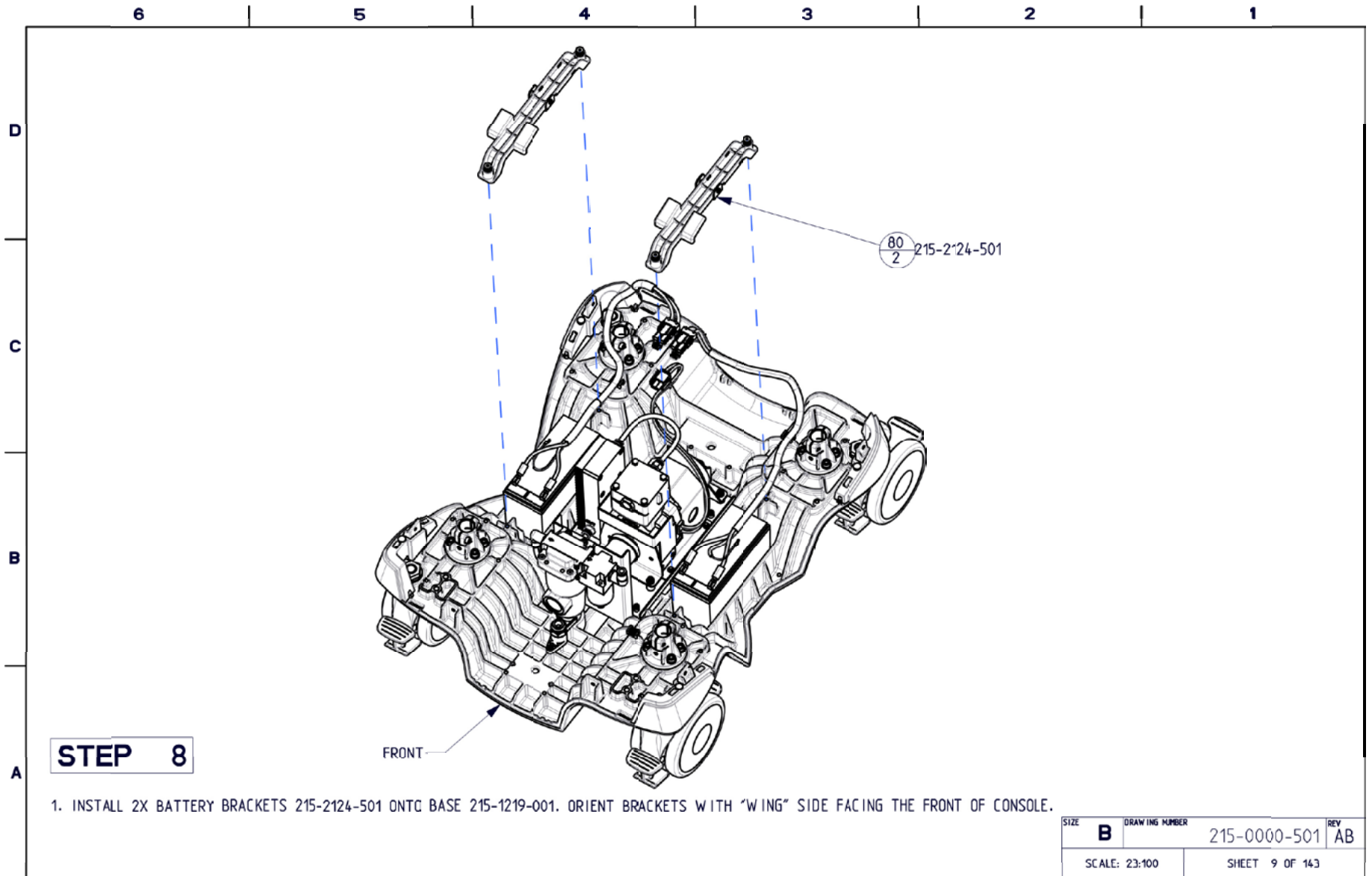


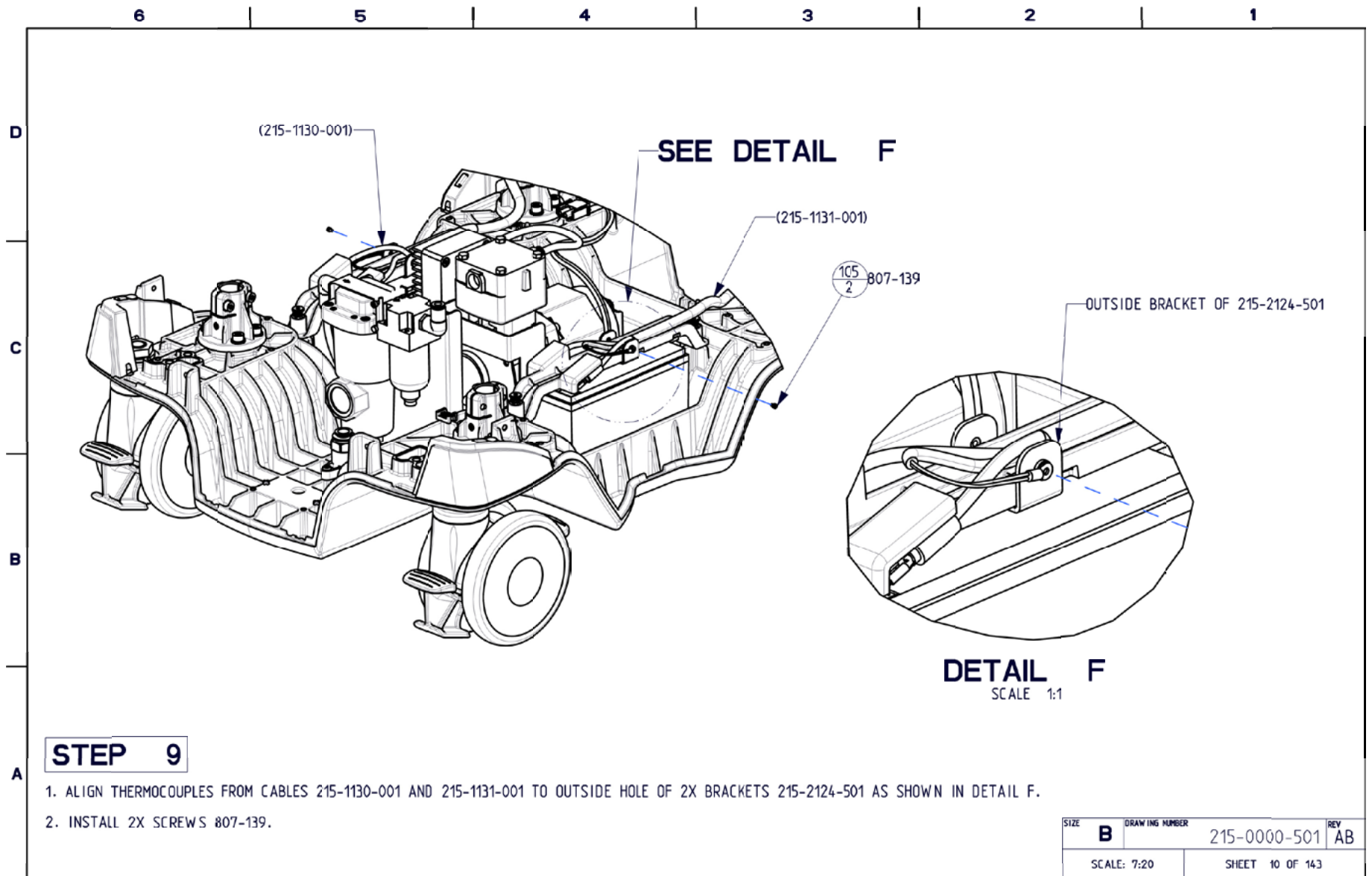


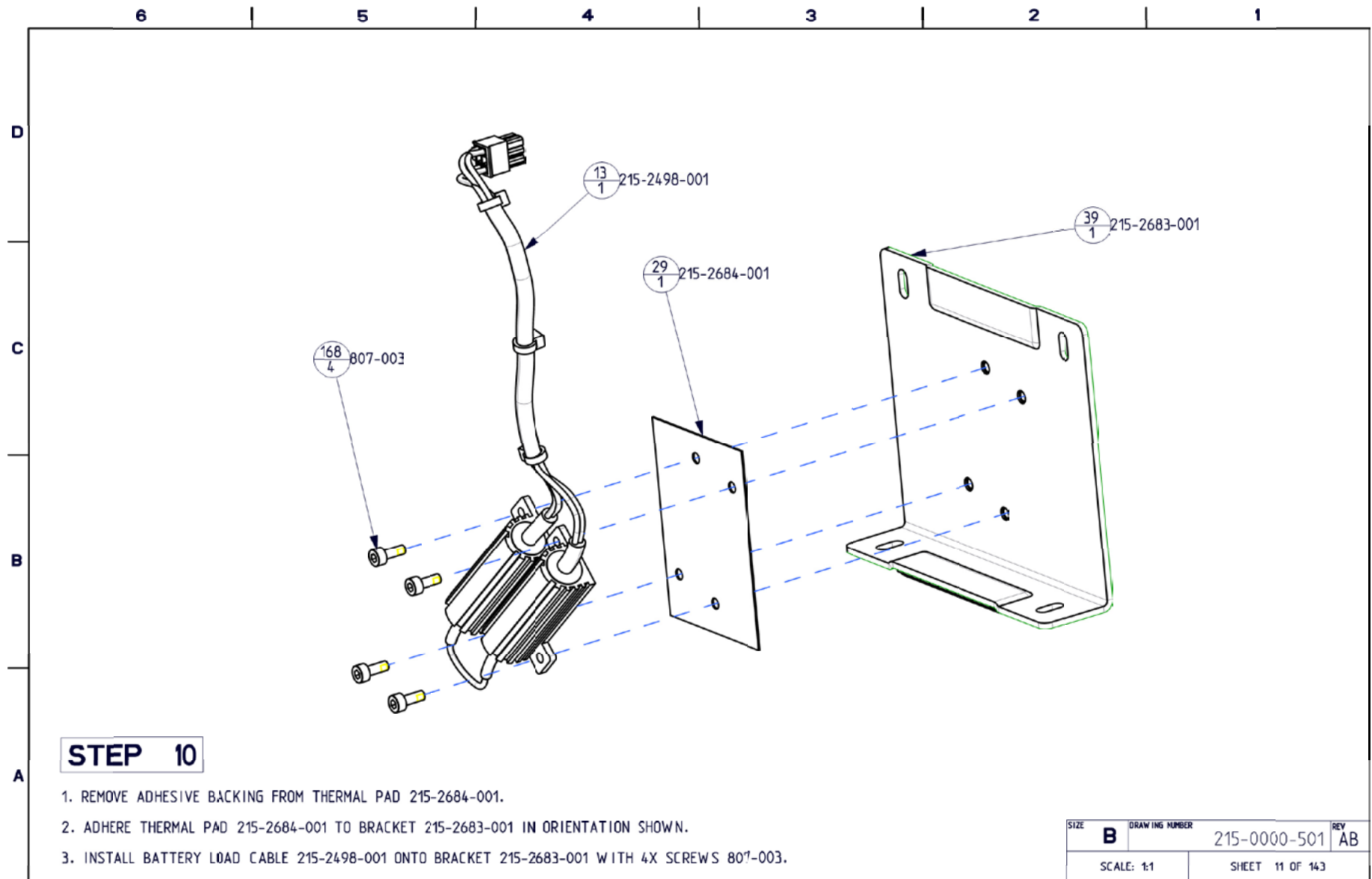


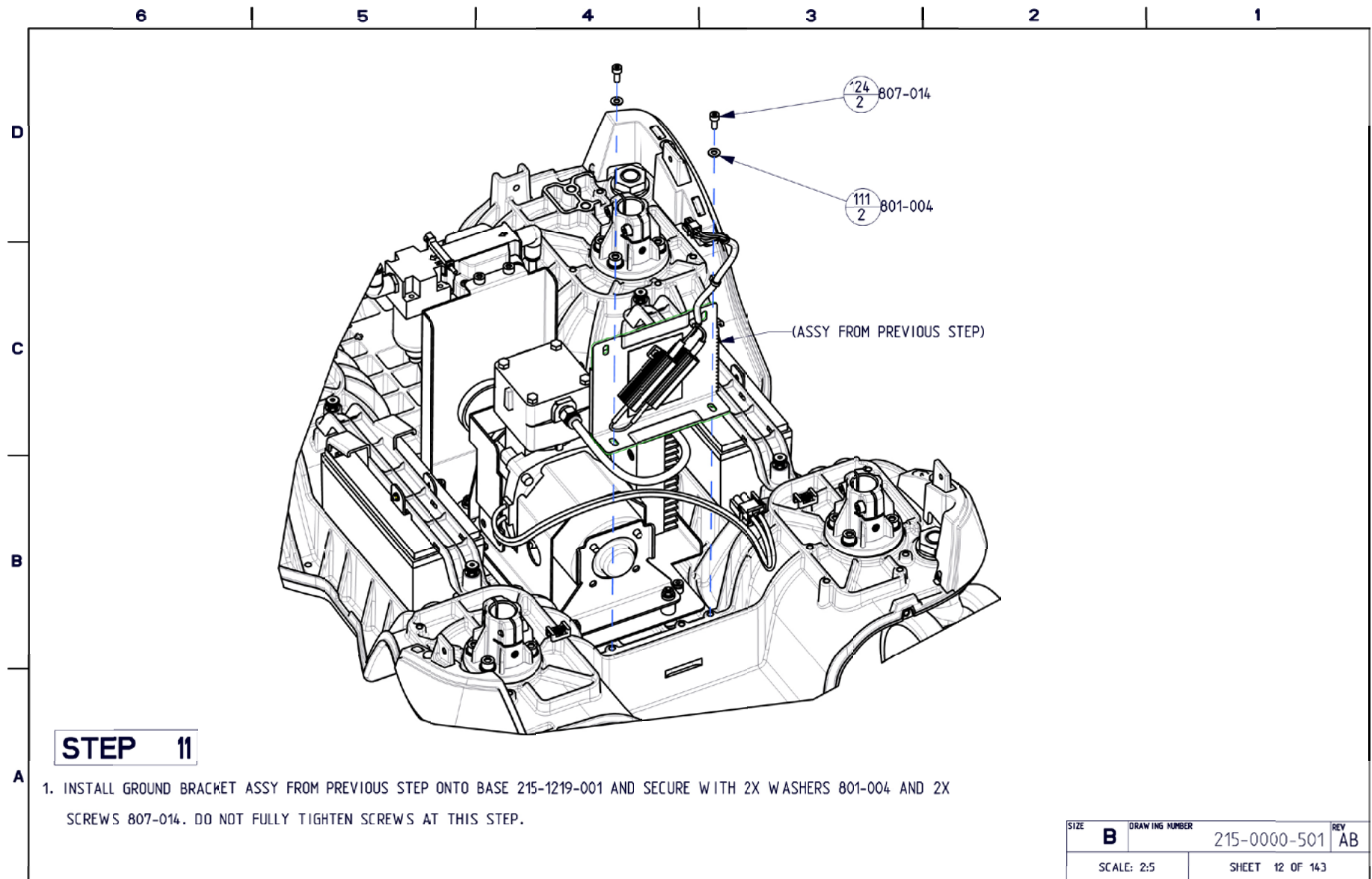


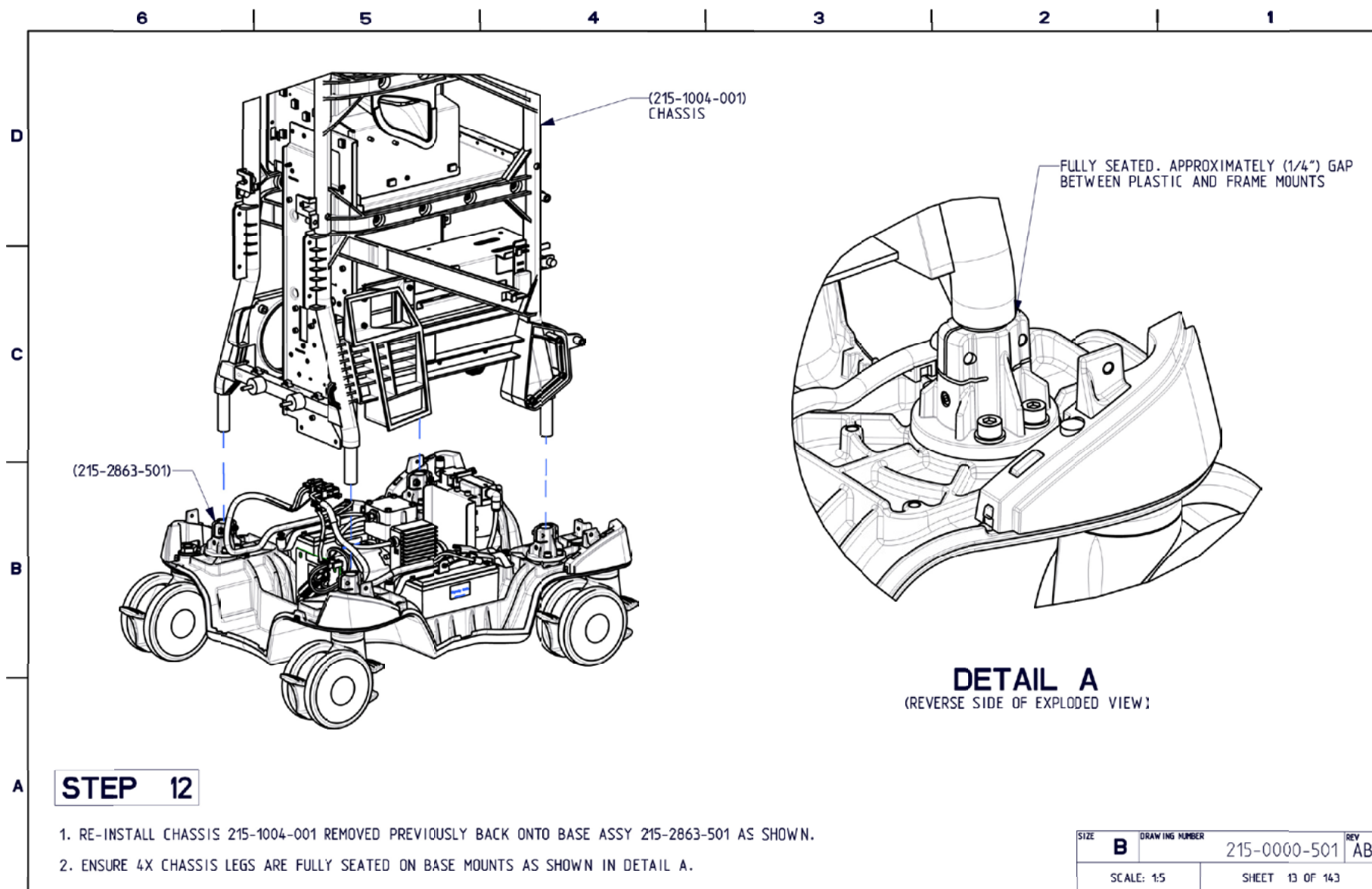


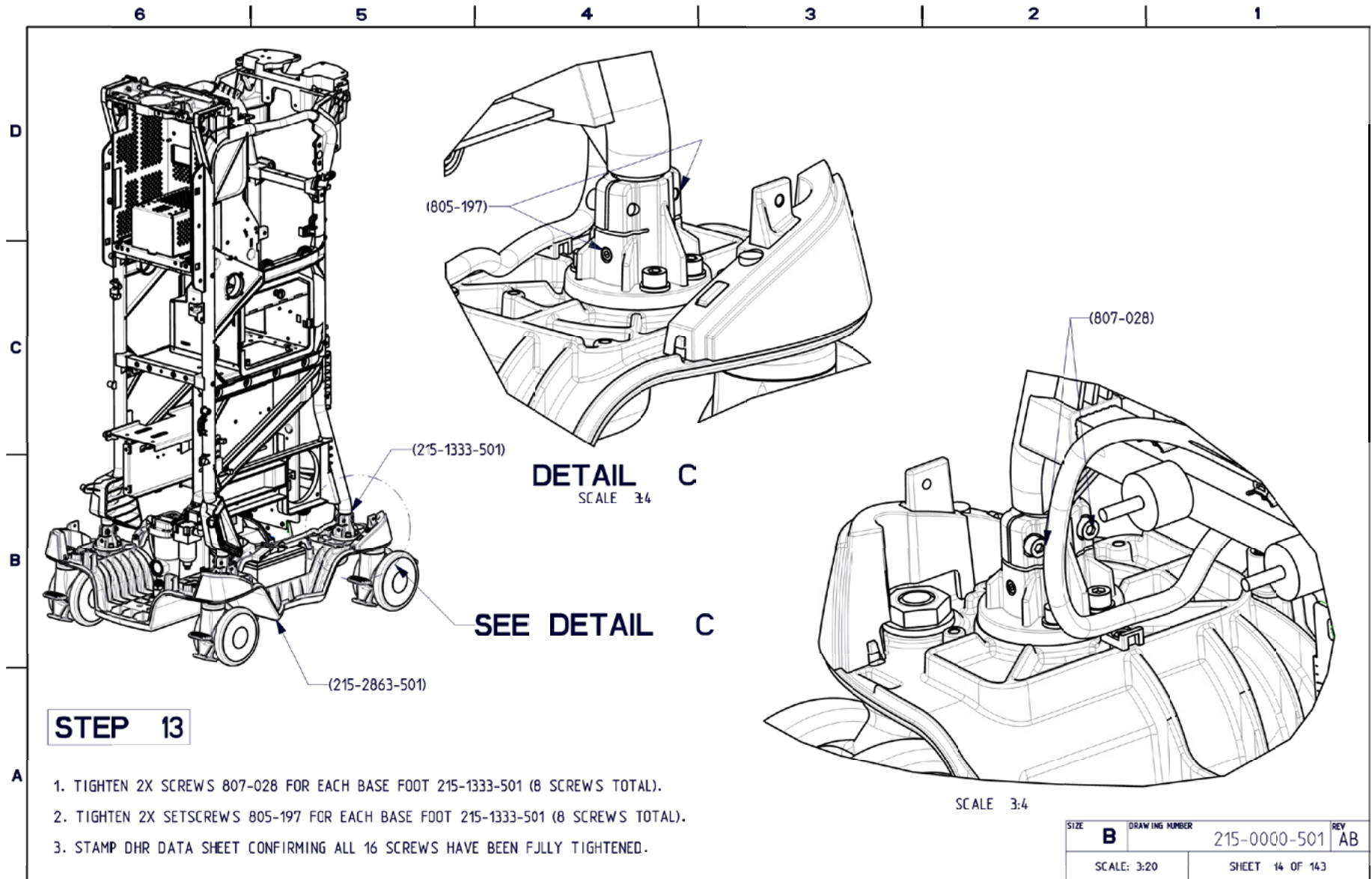


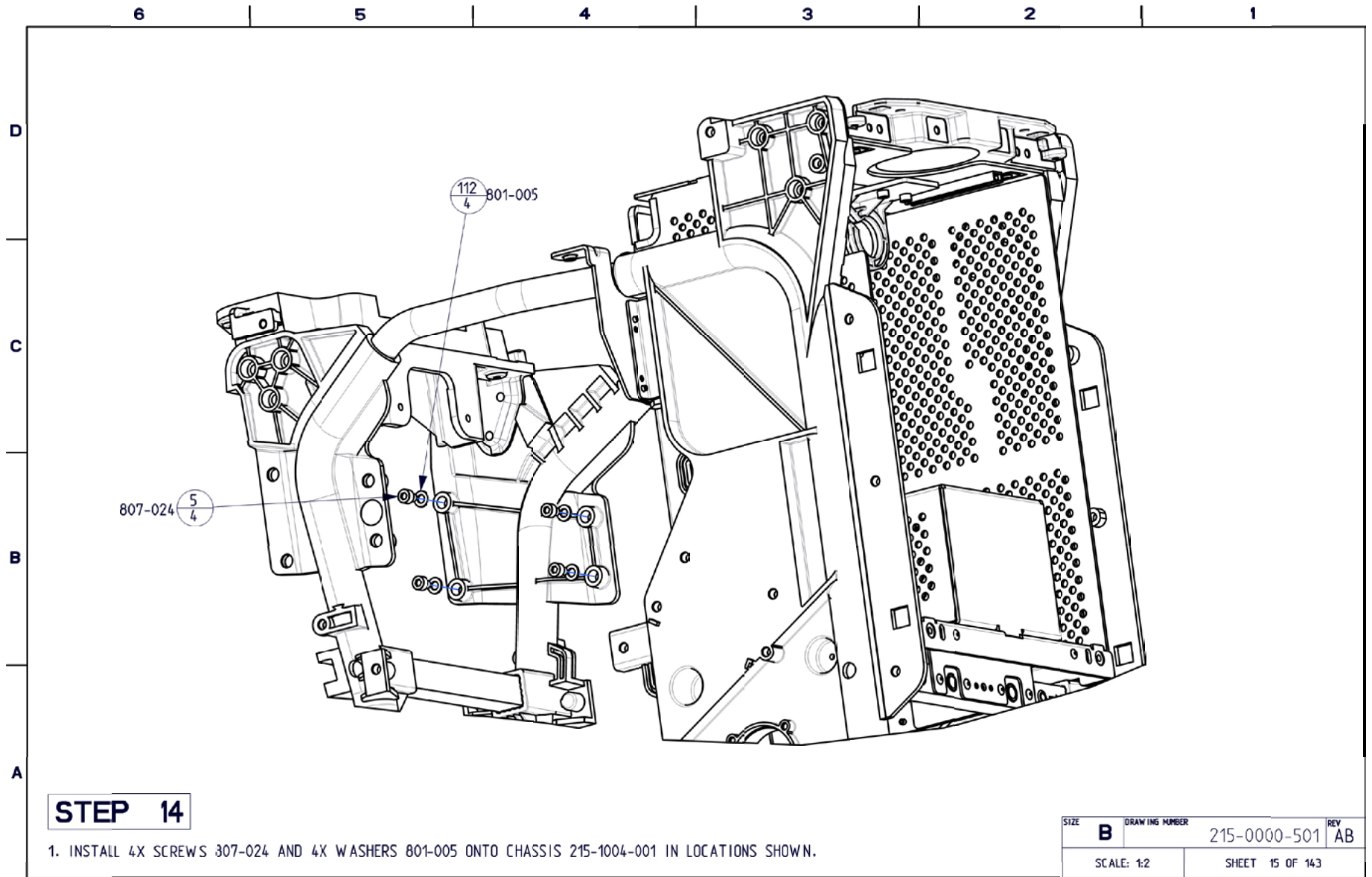






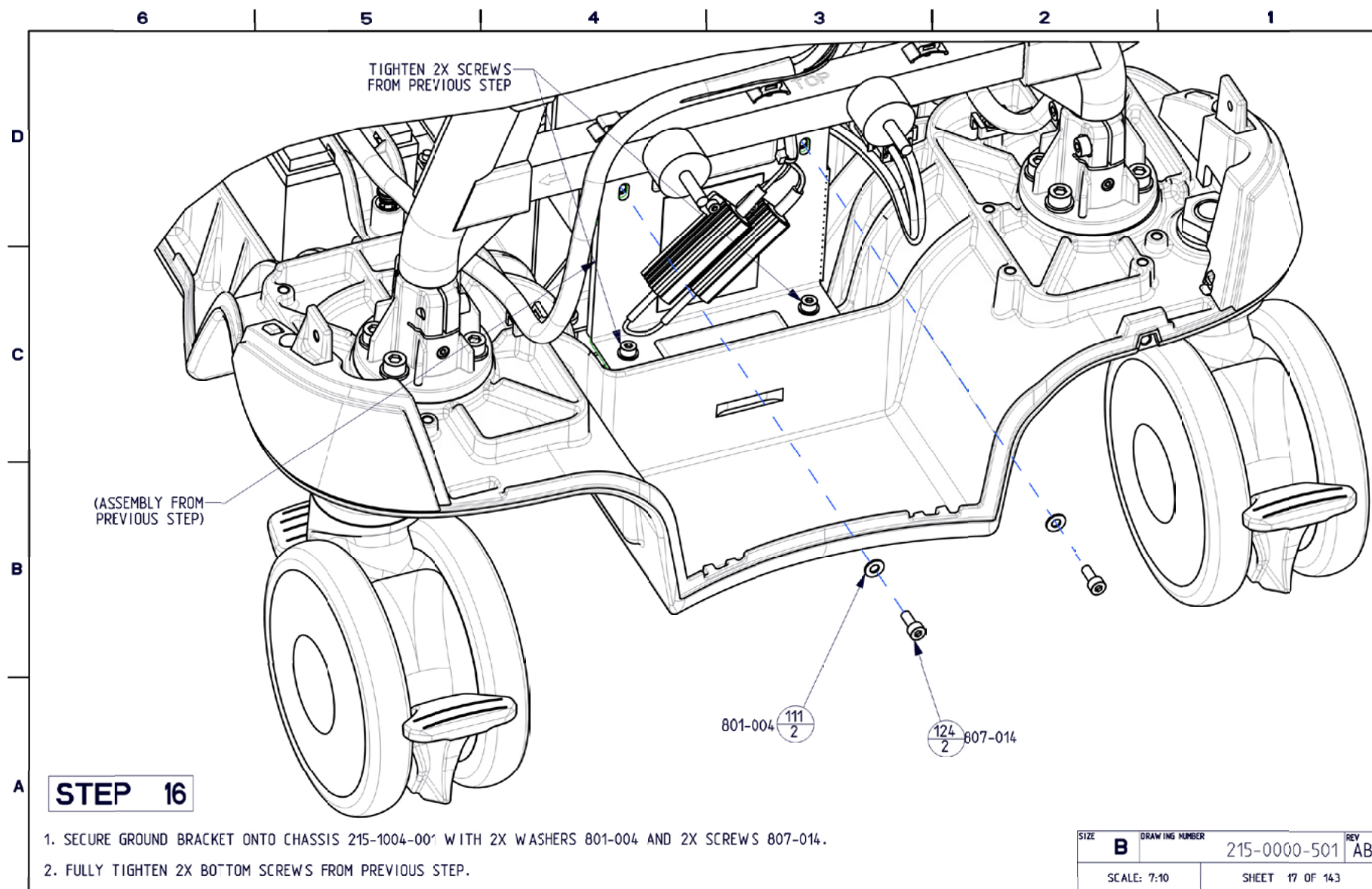


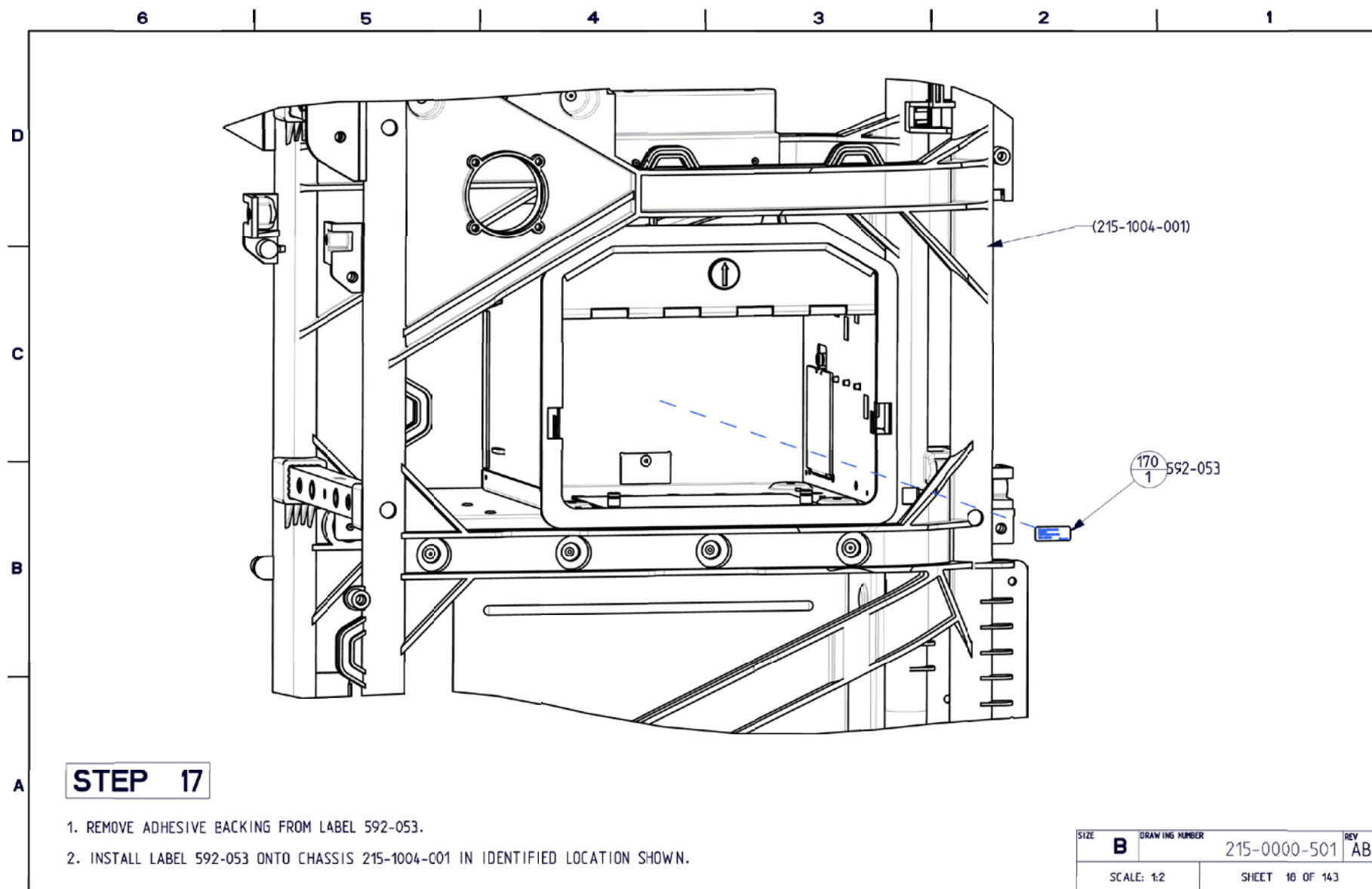


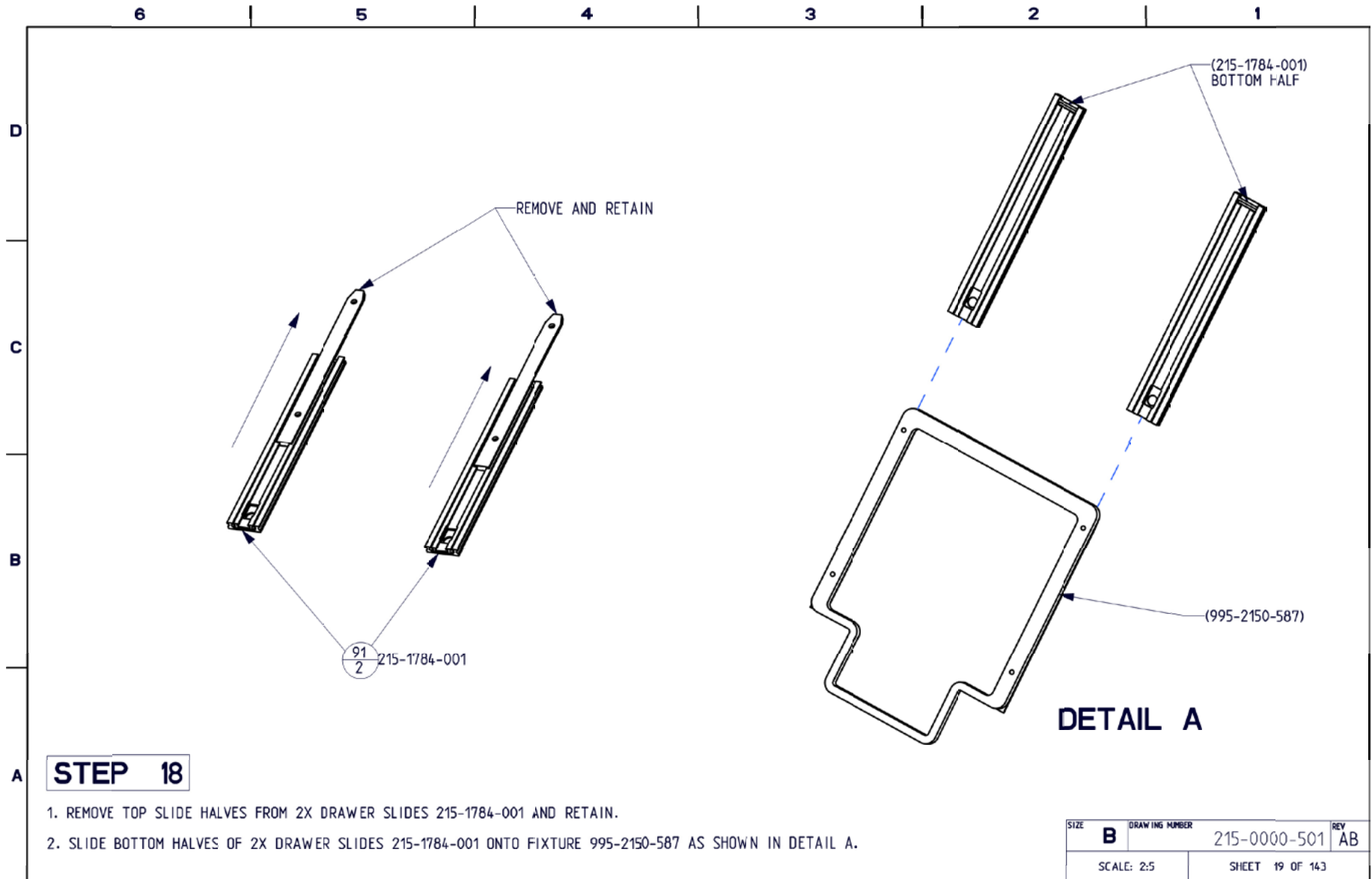


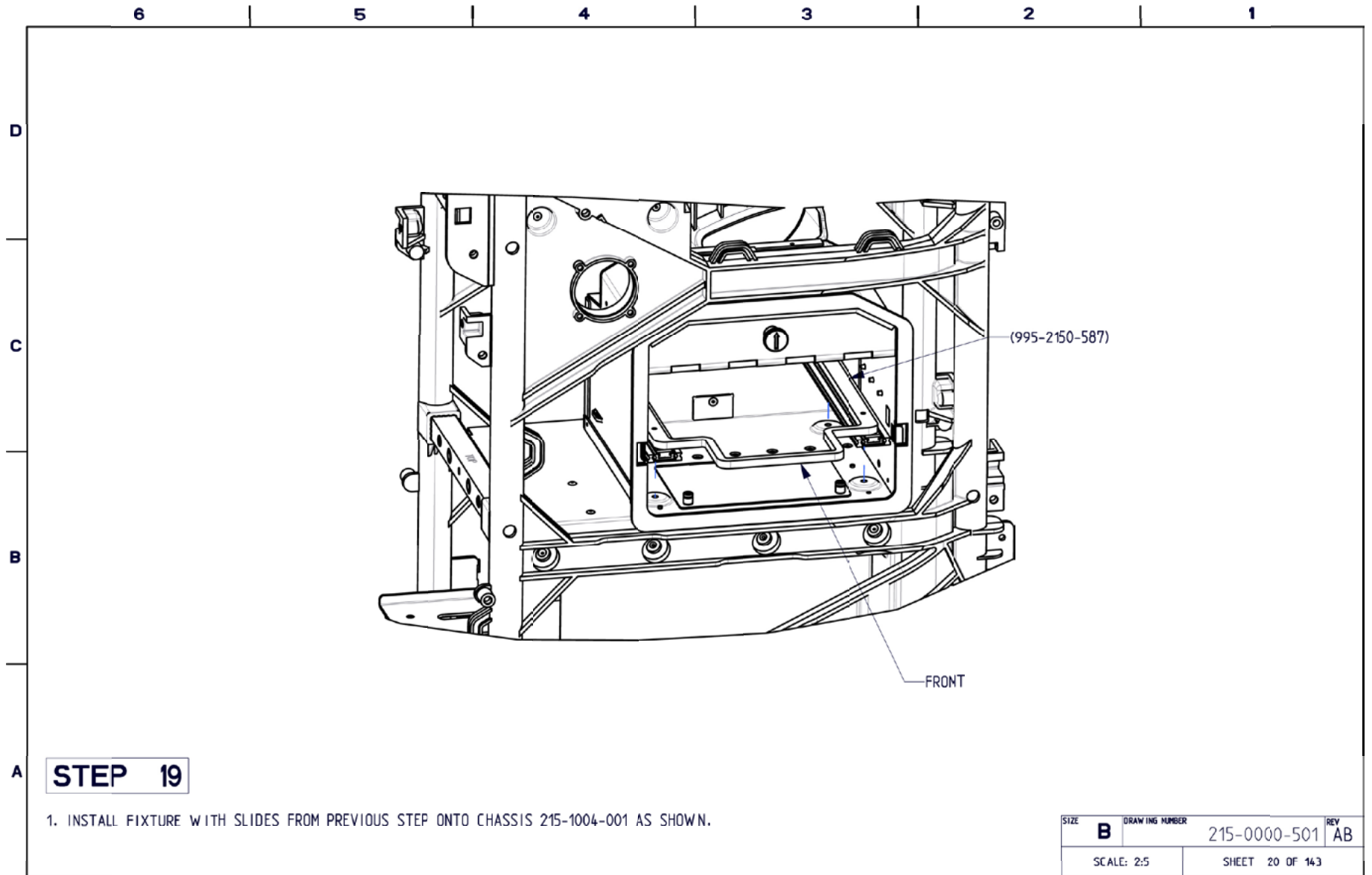


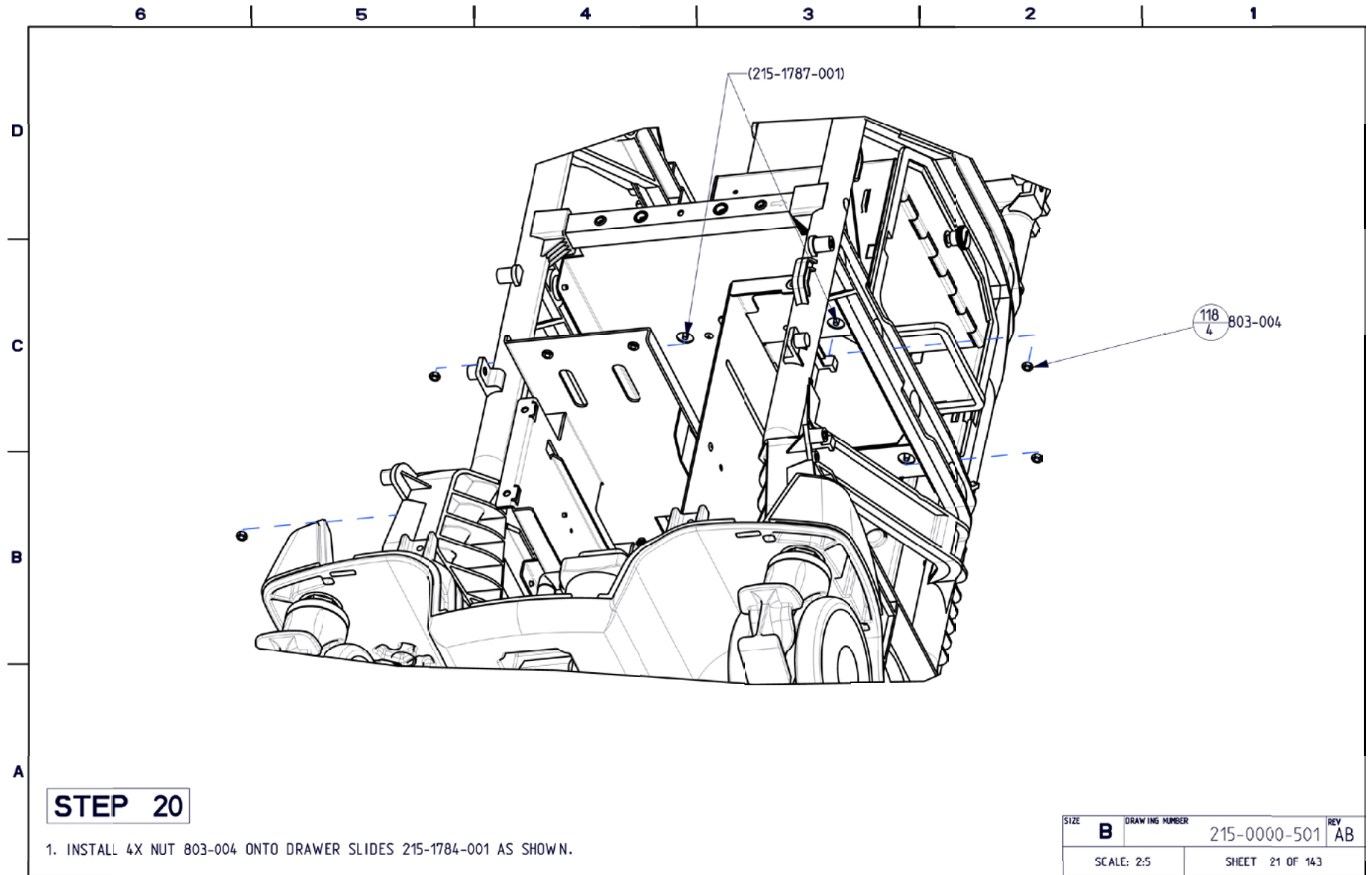
SIZE	B	DRAWING NUMBER	215-0000-501	REV	AB
SCALE: 1:2		SHEET 16 OF 143			

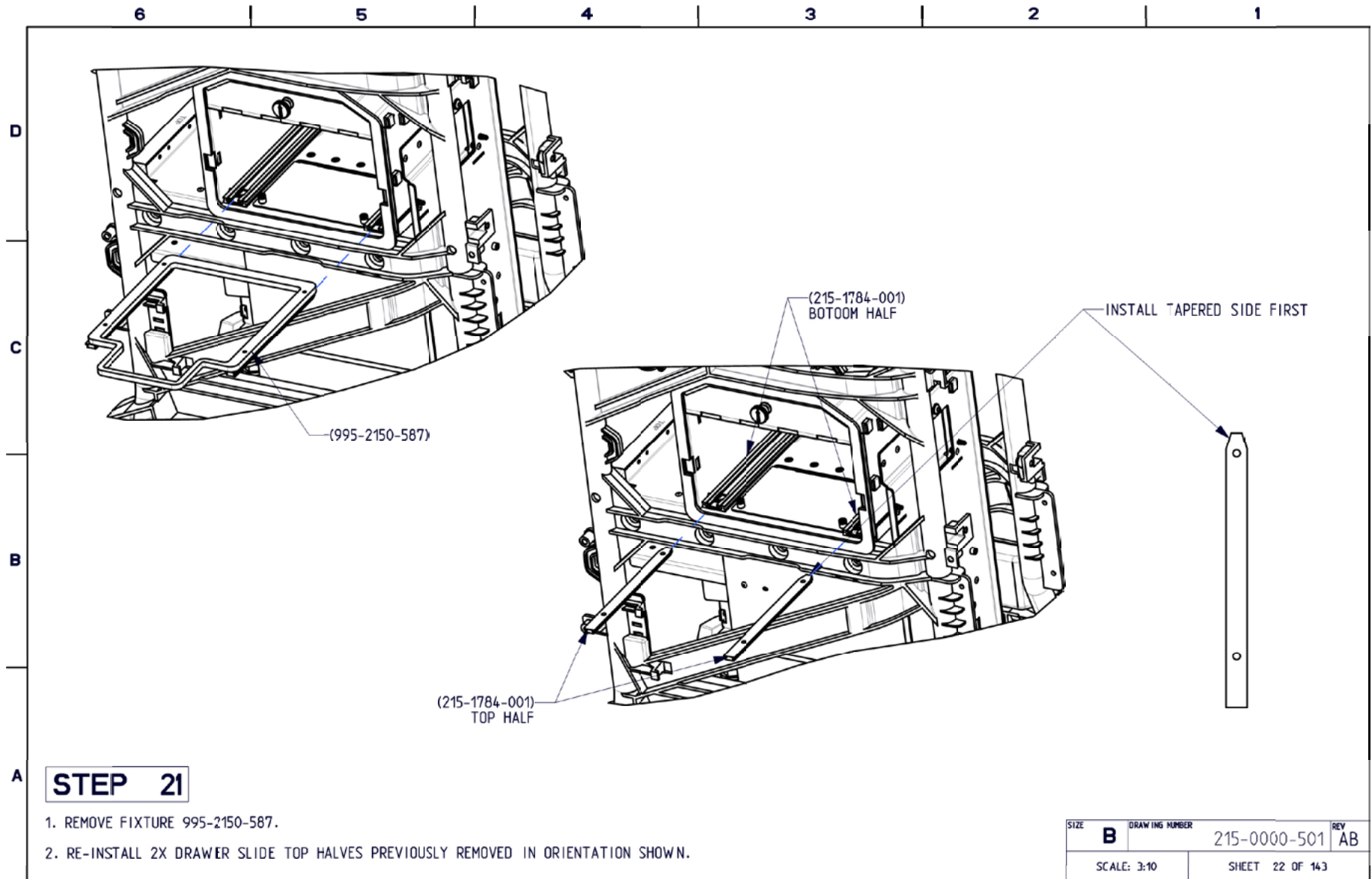


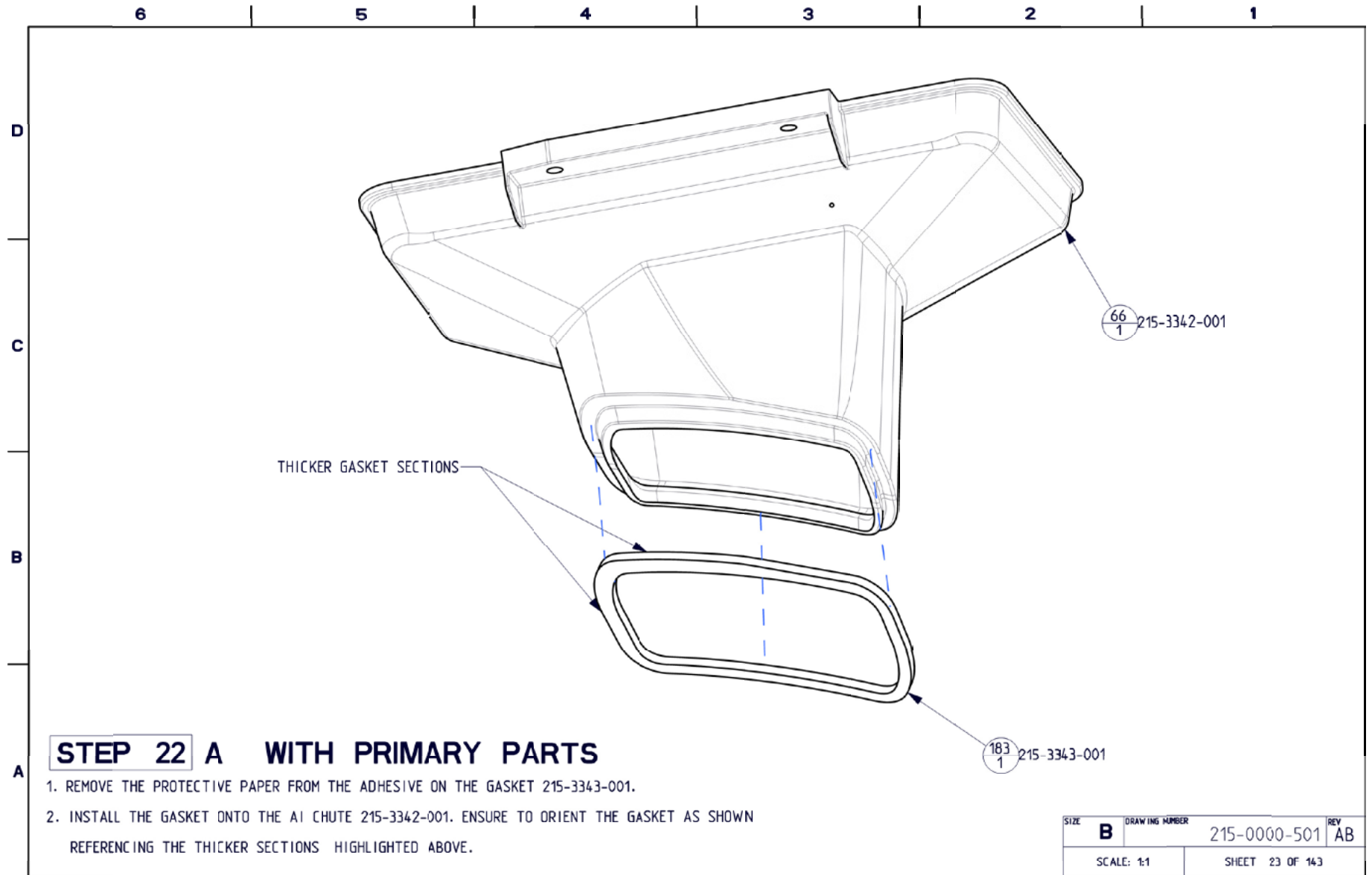


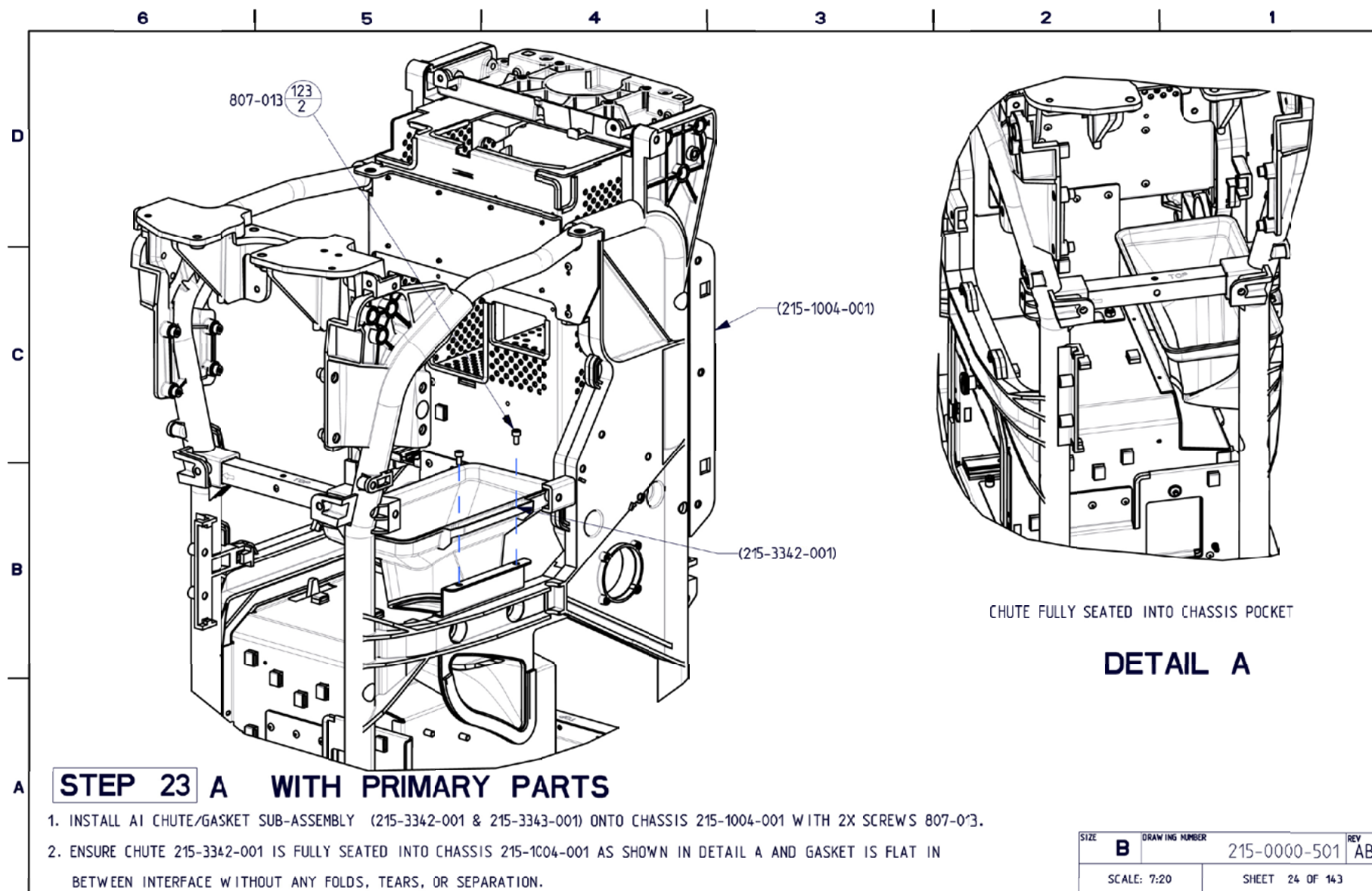












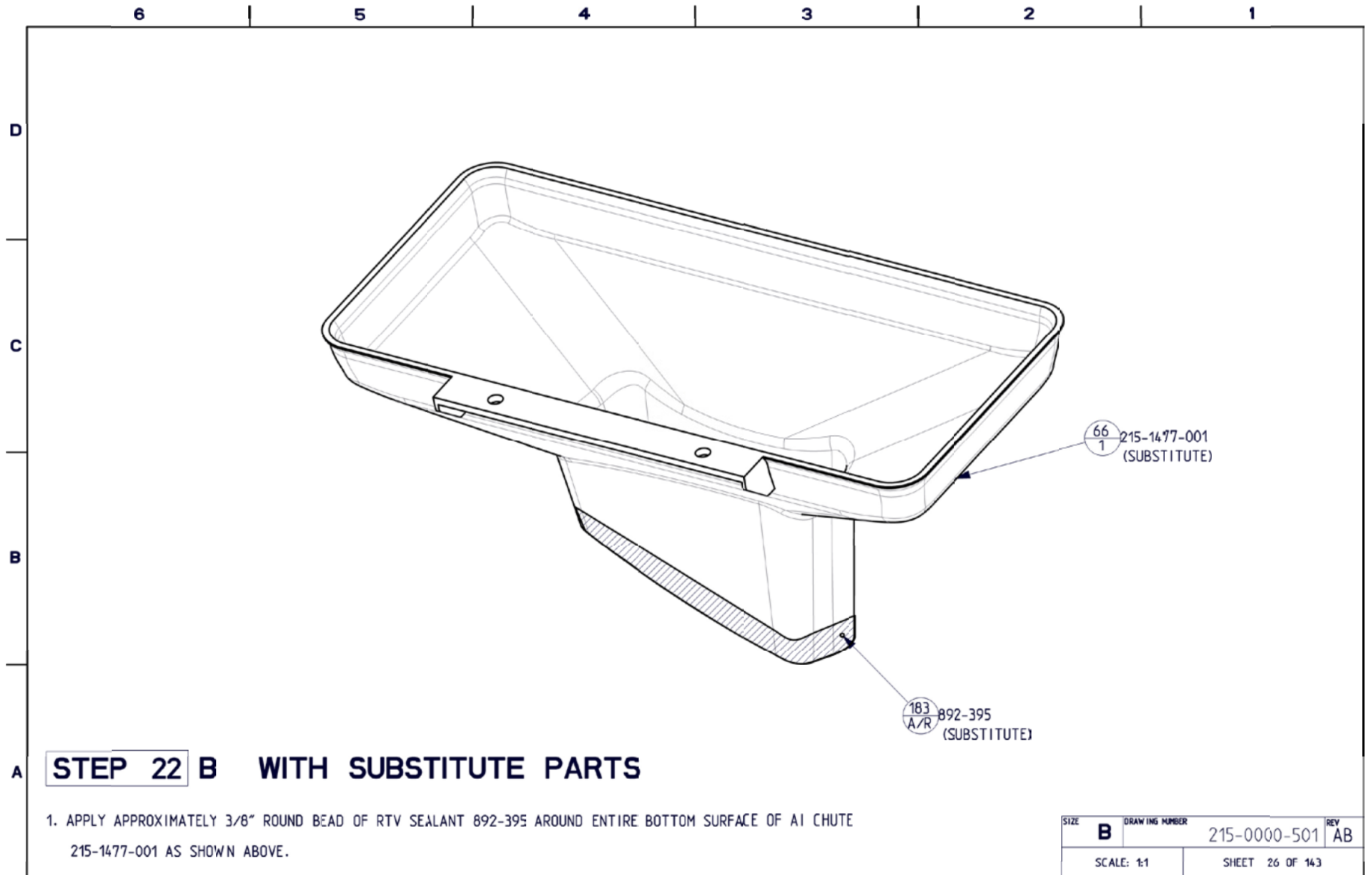
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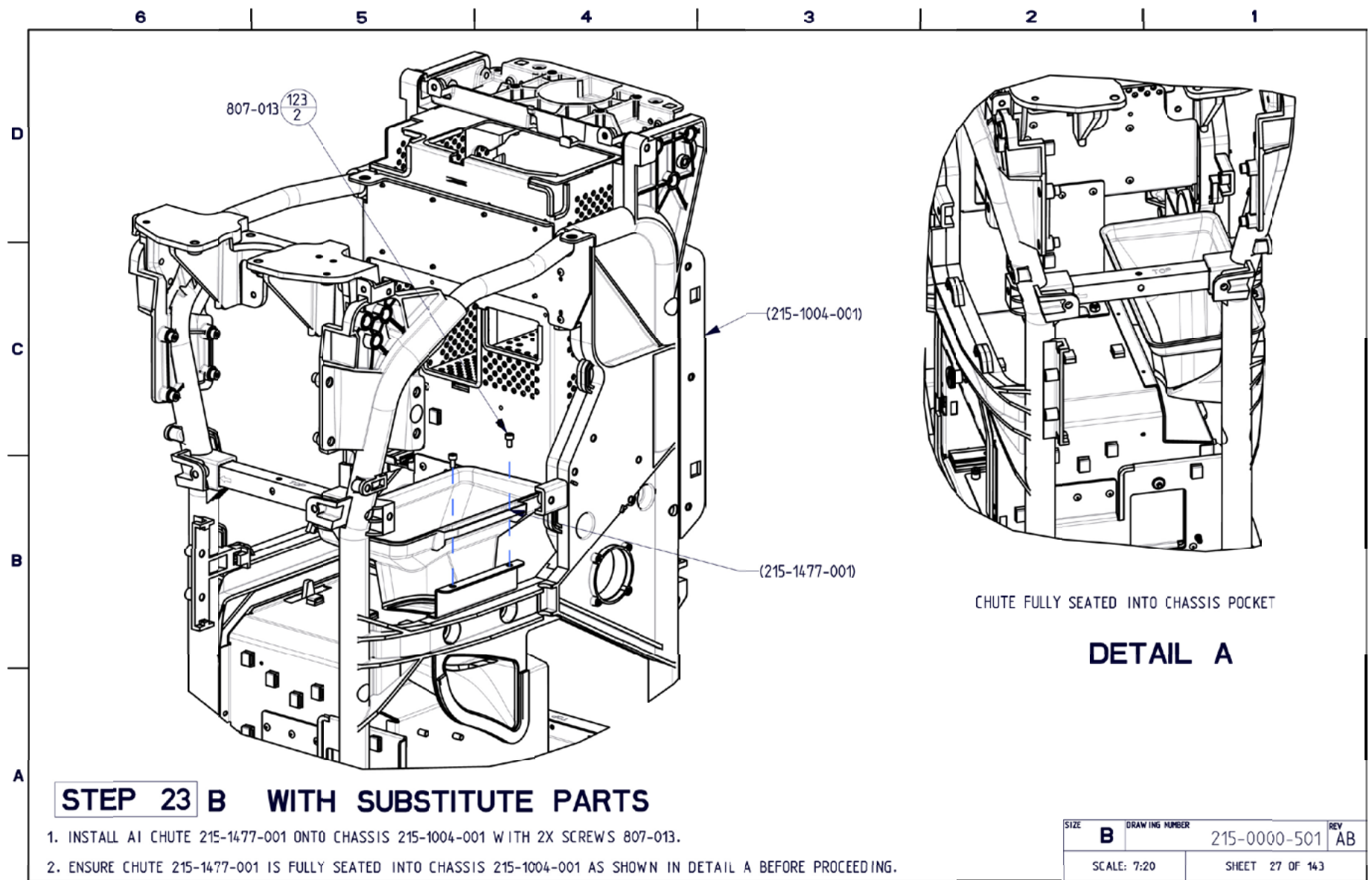
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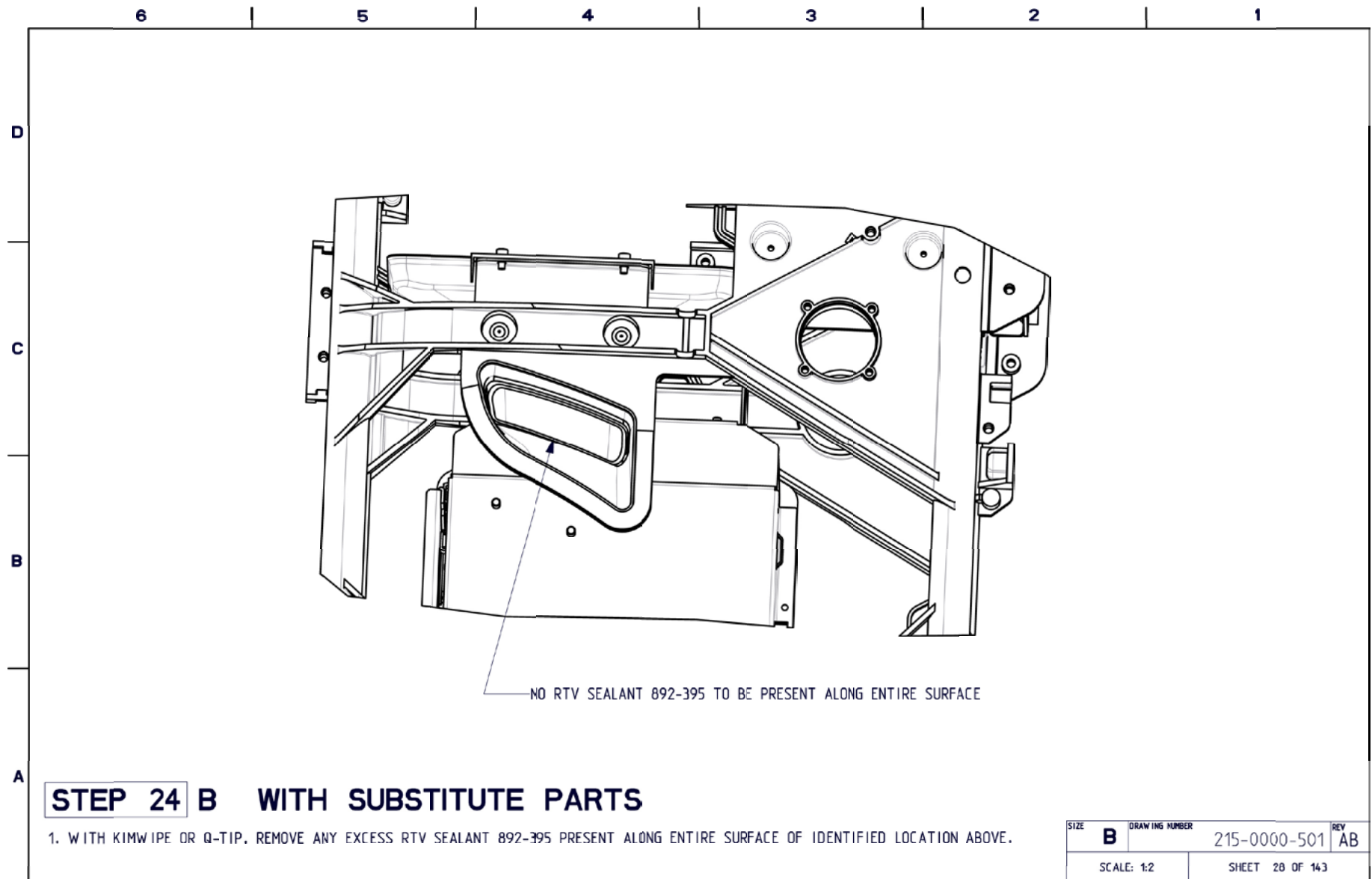
STEP 24 A WITH PRIMARY PARTS

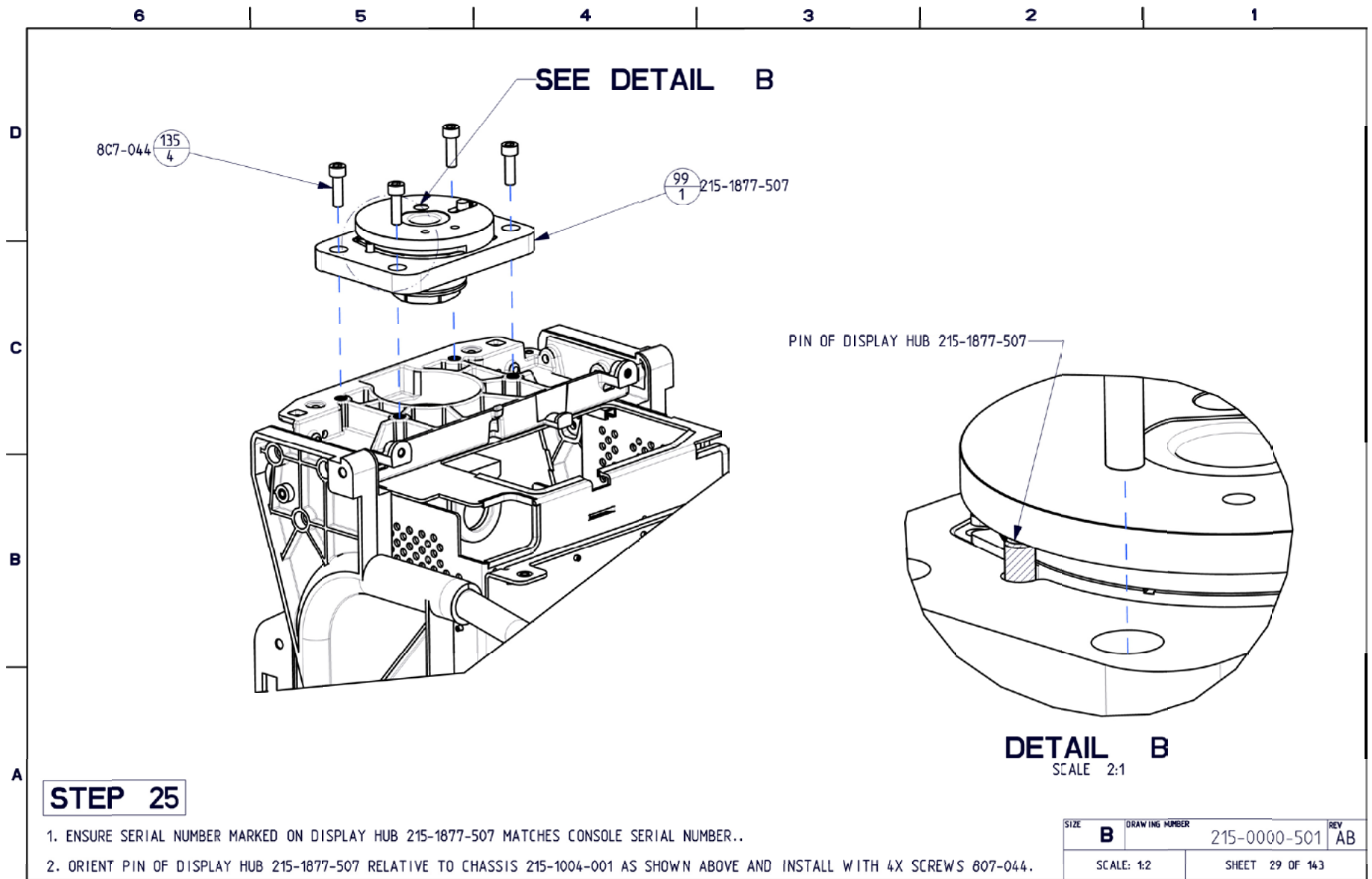
1. TO ENSURE THE AI CHUTE (215-3342-001) HAS BEEN ASSEMBLED CORRECTLY, LIGHTLY PULL UP ON AI CHUTE IN THE LOCATION SHOWN BY ARROW ABOVE. THE AI CHUTE SHOULD NOT PULL AWAY FROM THE FRAME INTERFACE, IT SHOULD STAY LOCKED IN PLACE WITH THE FRAME.
2. IF THE AI CHUTE DOES COME LOOSE, THEN DISASSEMBLE SCREWS FROM PREVIOUS STEP AND ATTEMPT THE ASSEMBLY AGAIN ENSURING THE CHUTE INSTALLS FULLY INTO FRAME INTERFACE.

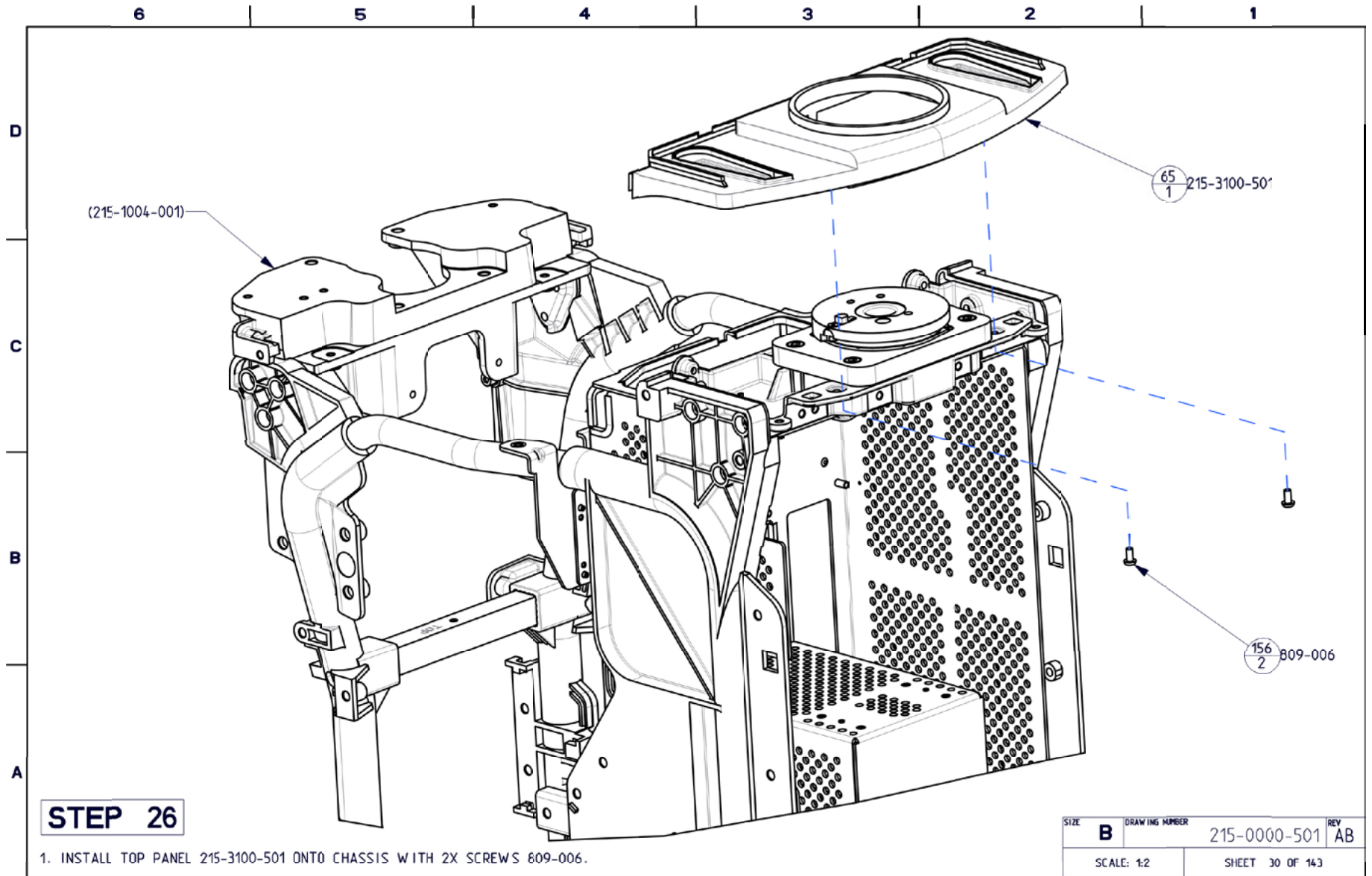
SIZE	B	DRAWING NUMBER	215-0000-501	REV	AB
SCALE: 1:2		SHEET 25 OF 143			

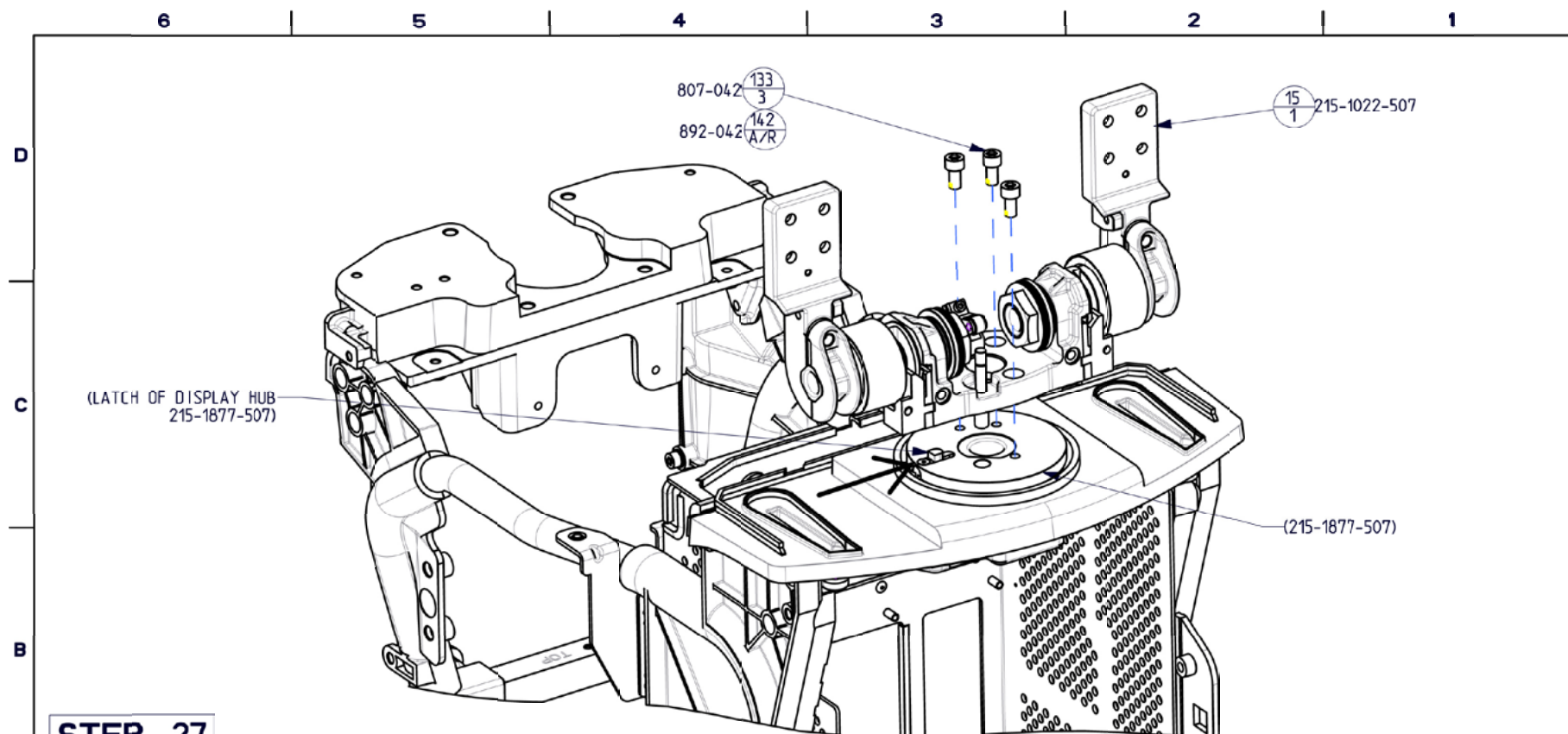








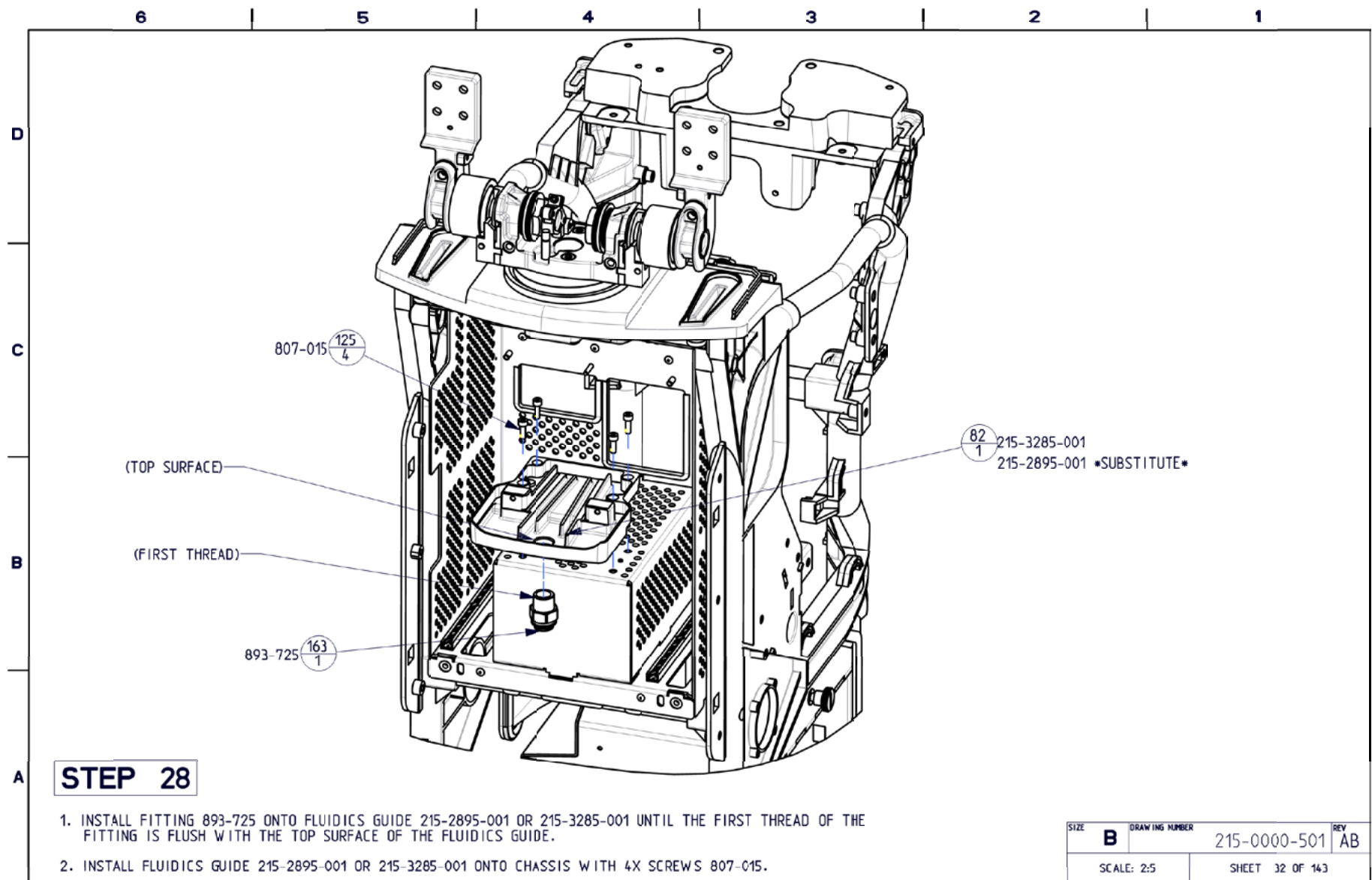


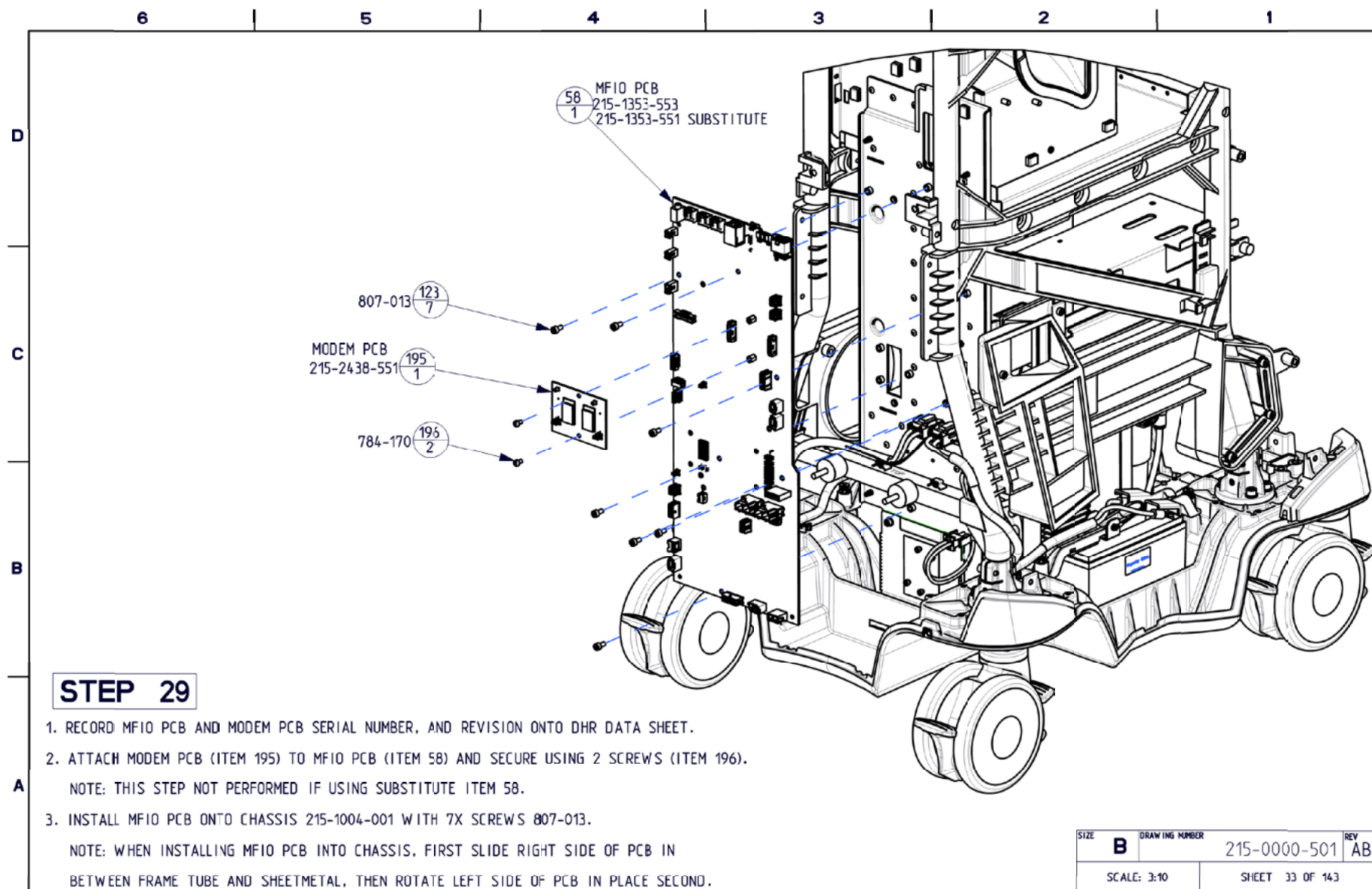


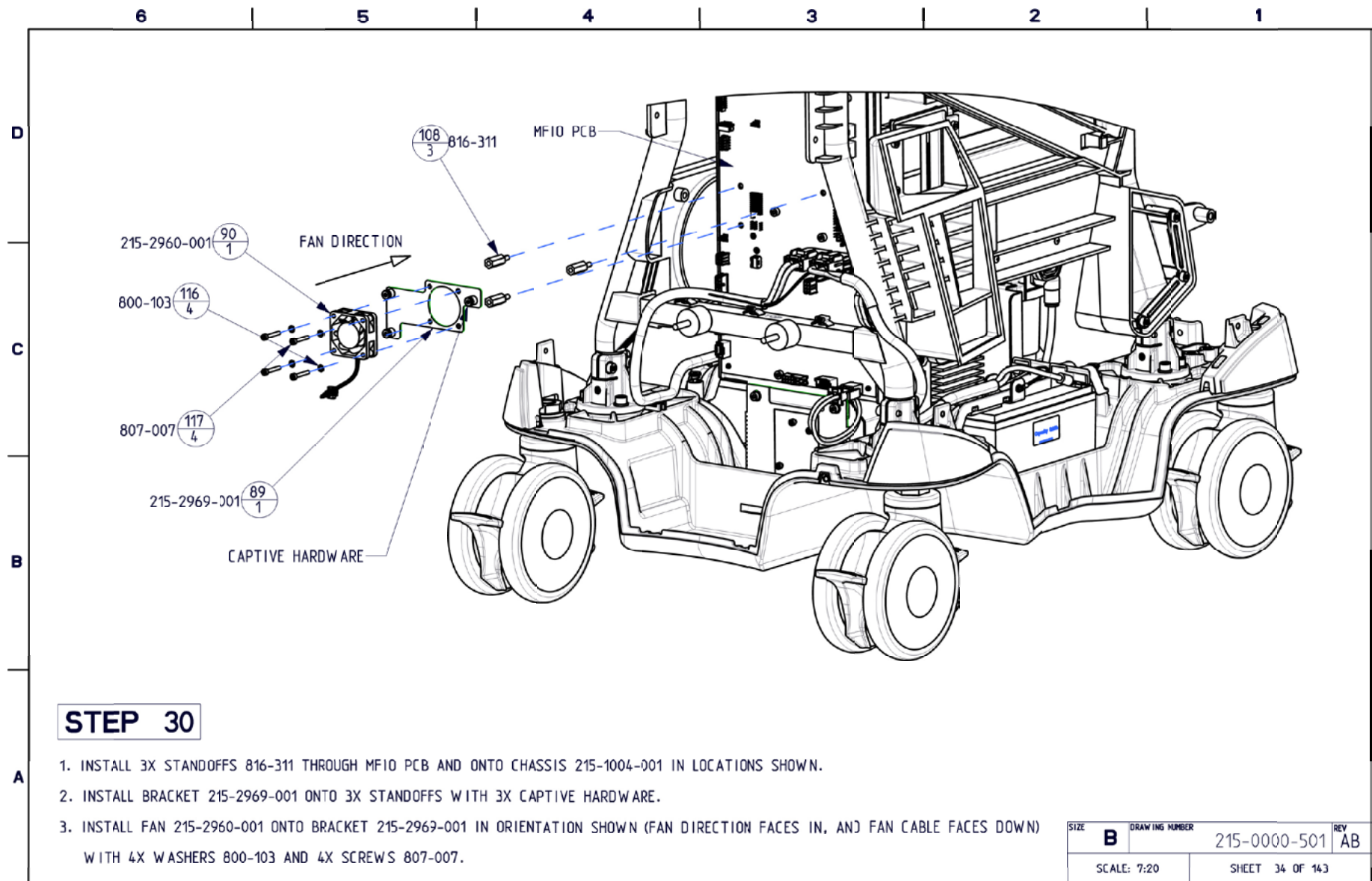
STEP 27

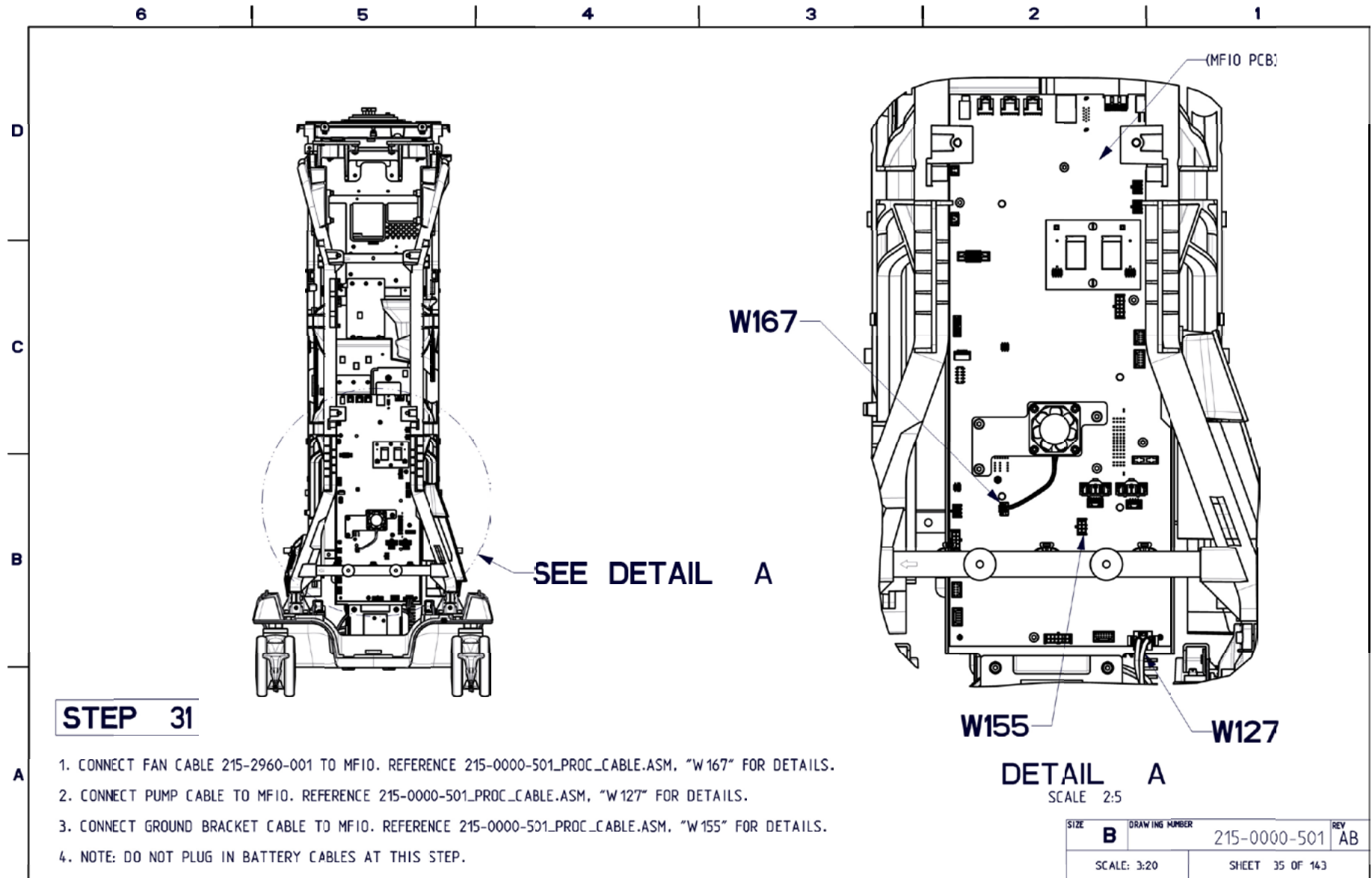
1. ENSURE DISPLAY HINGE 215-1022-507 SERIAL NUMBER MATCHES CONSOLE SERIAL NUMBER. STAMP DHR DATA SHEET TO CONFIRM DISPLAY HINGE SERIAL NUMBER MATCHES CONSOLE SERIAL NUMBER.
2. PRESS AND HOLD IDENTIFIED LATCH OF DISPLAY HUB 215-1877-507 TO THE RIGHT.
3. PLACE DISPLAY HINGE 215-1022-507 ONTO DISPLAY HUB 215-1877-507.
4. ADD LOCTITE 892-042 TO 3X SCREWS 807-042.
5. SECURE DISPLAY HINGE 215-1022-507 TO HUB 215-1877-507 WITH 3X SCREWS 807-042.
6. INSERT DISPLAY HINGE / DISPLAY HUB DHR DATA SHEET INTO THE OVERALL CONSOLE DHR PACKET. ENSURE SERIAL NUMBERS OF BOTH DATA SHEETS MATCH BEFORE PROCEEDING. STAMP DHR DATA SHEET TO CONFIRM DISPLAY ARM ASSEMBLY DHR DATA SHEET HAS BEEN INSERTED INTO CONSOLE DHR PACKET.

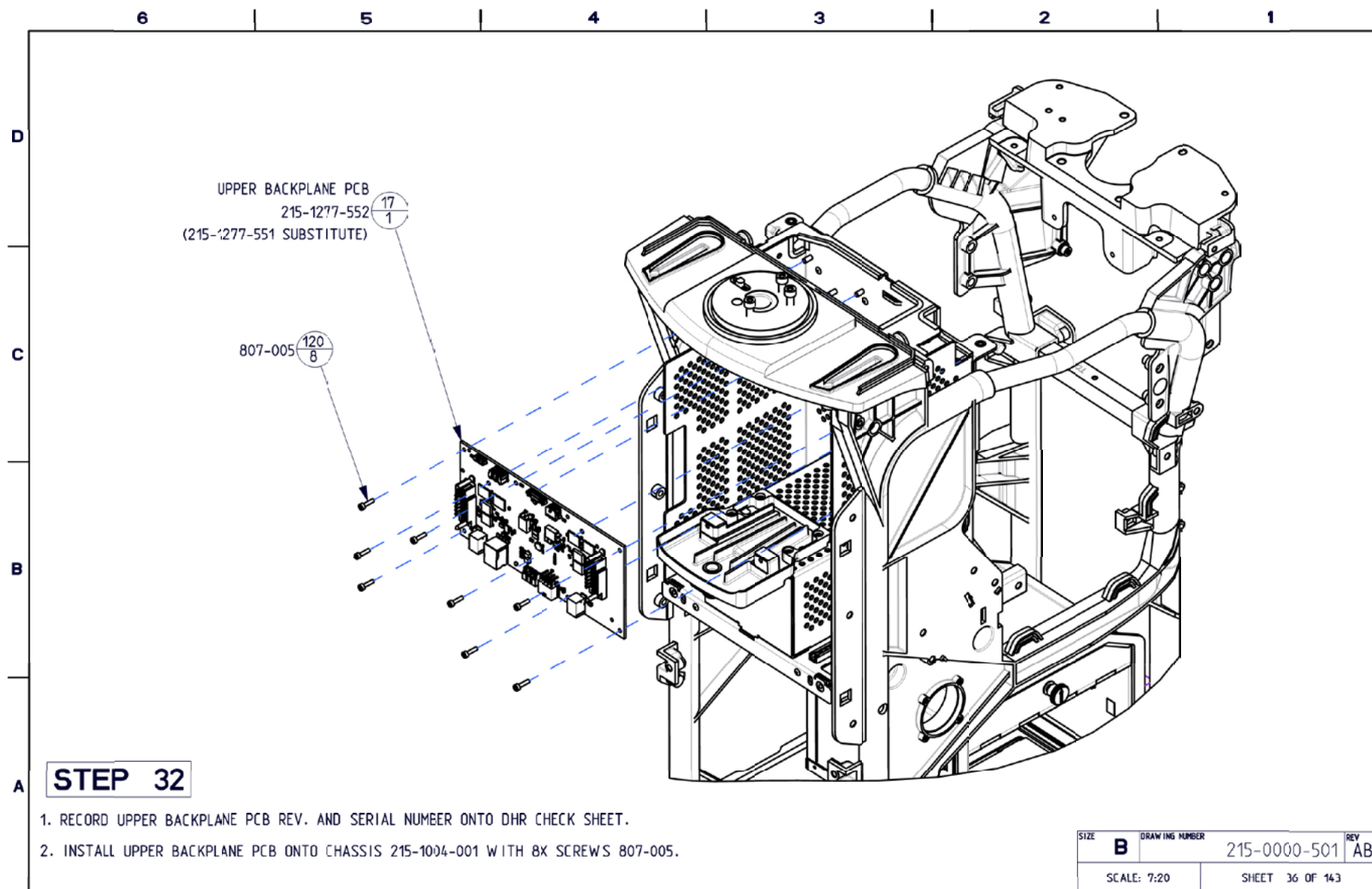
SIZE	DRAWING NUMBER	REV
B	215-0000-501	AB
SCALE: 1:2	SHEET 31 OF 143	

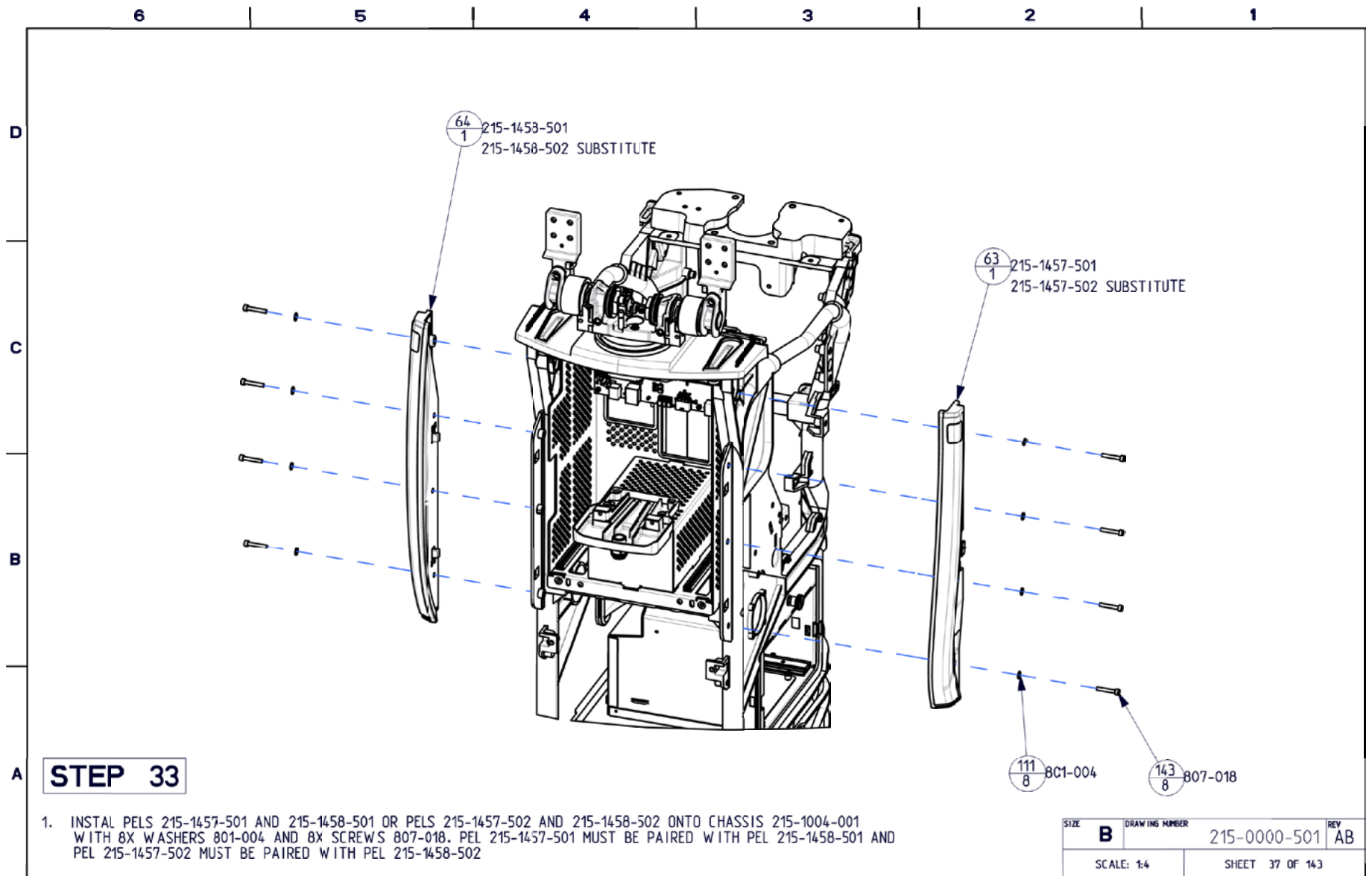


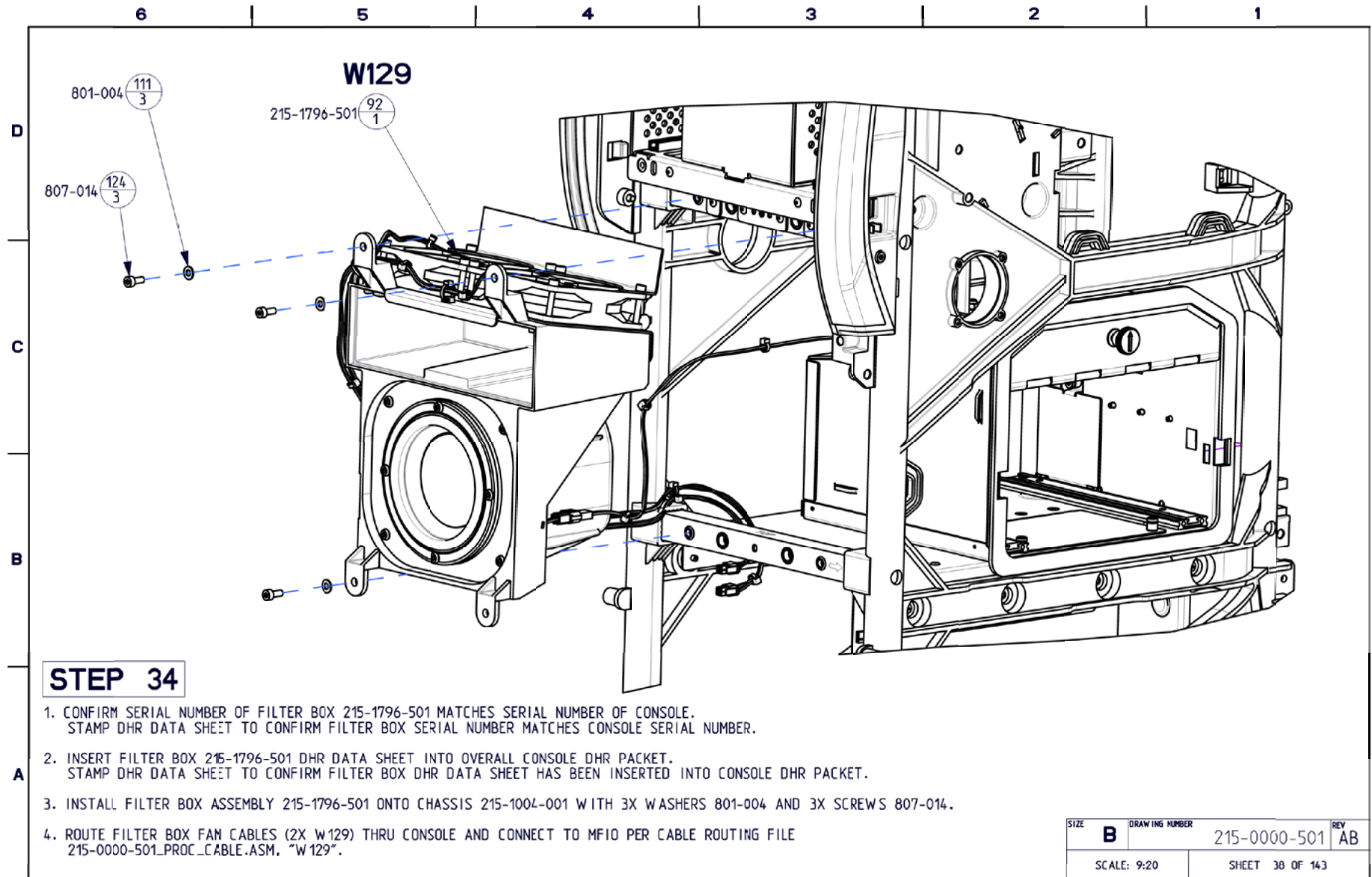


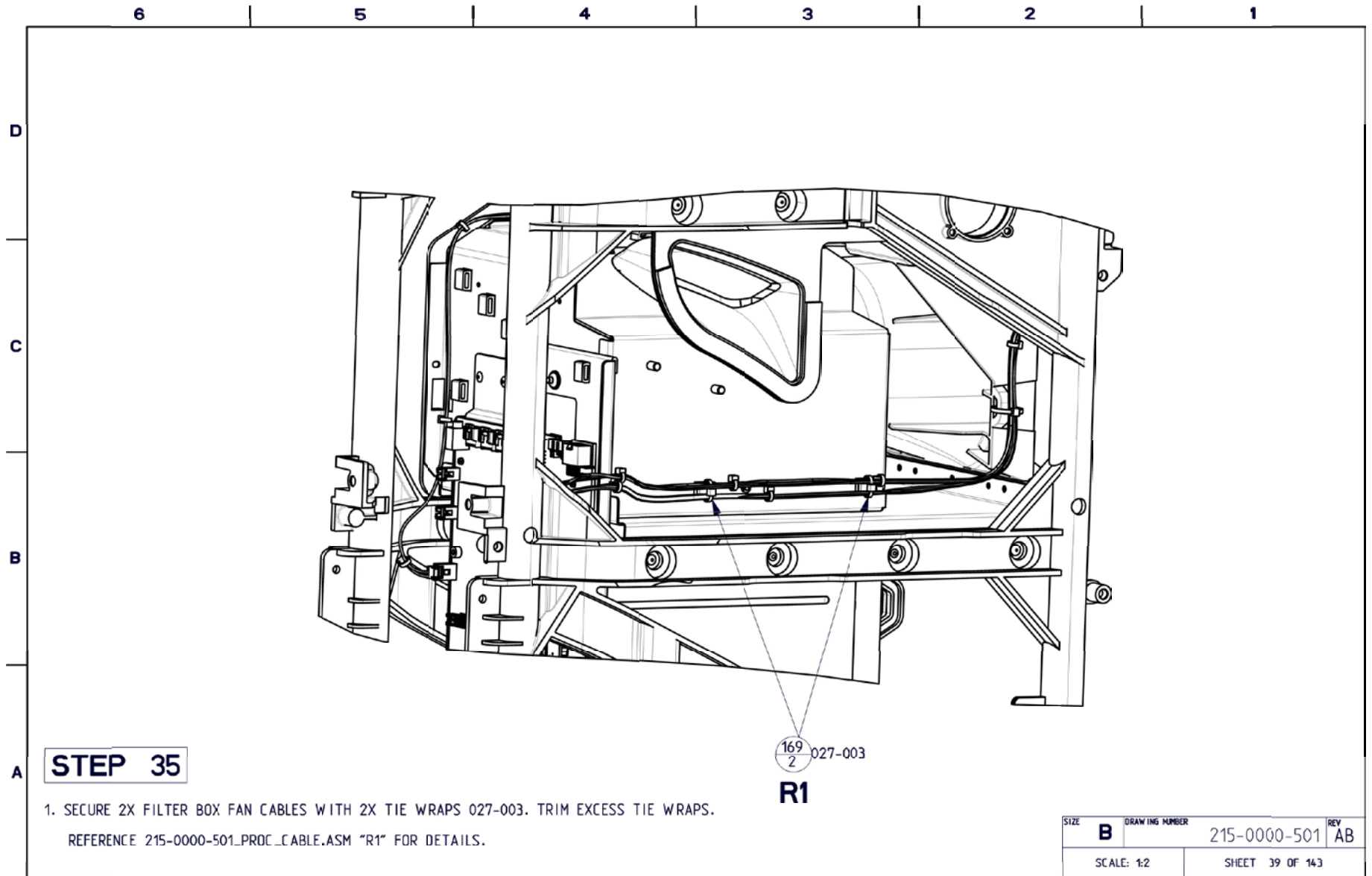


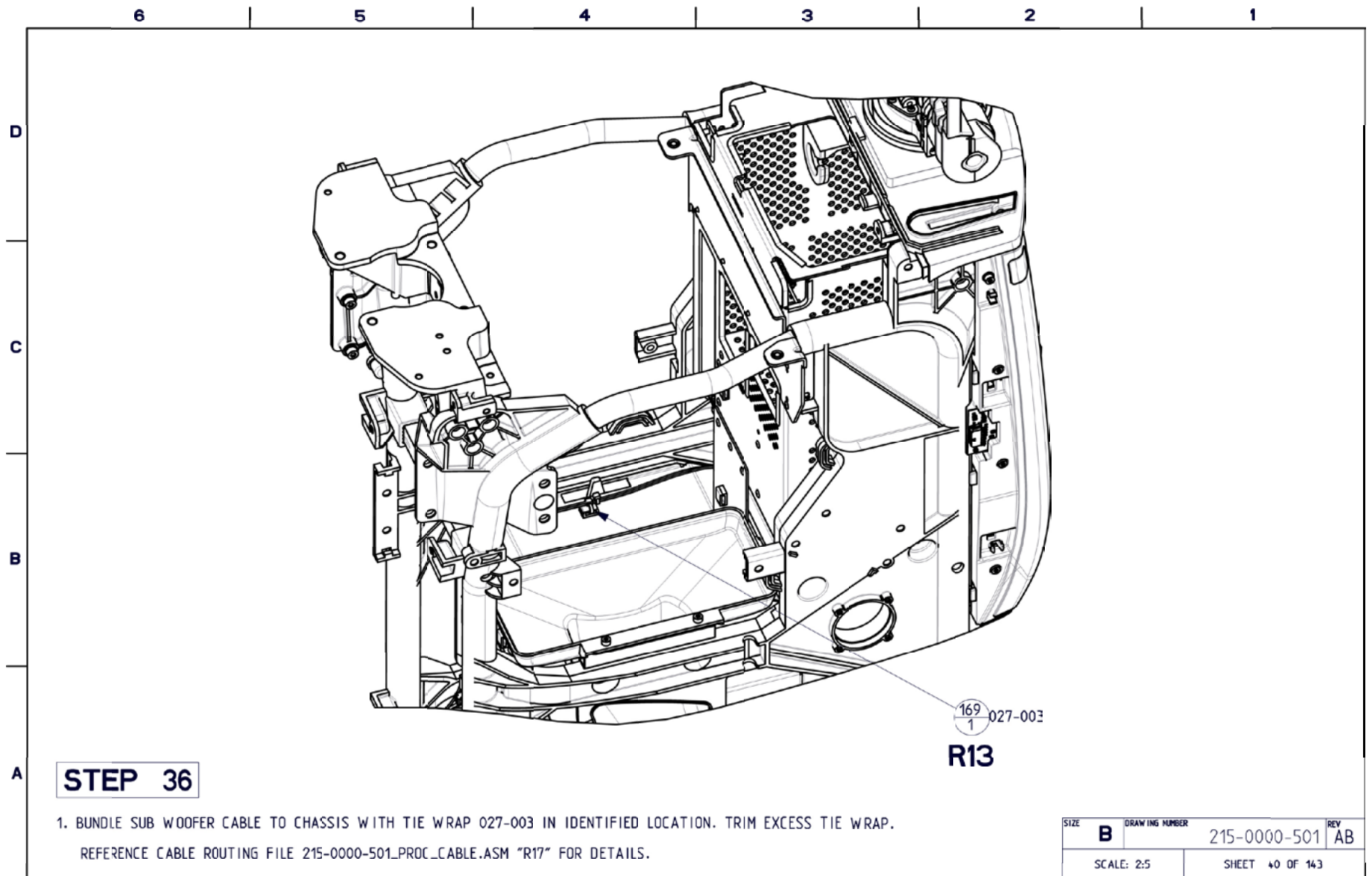


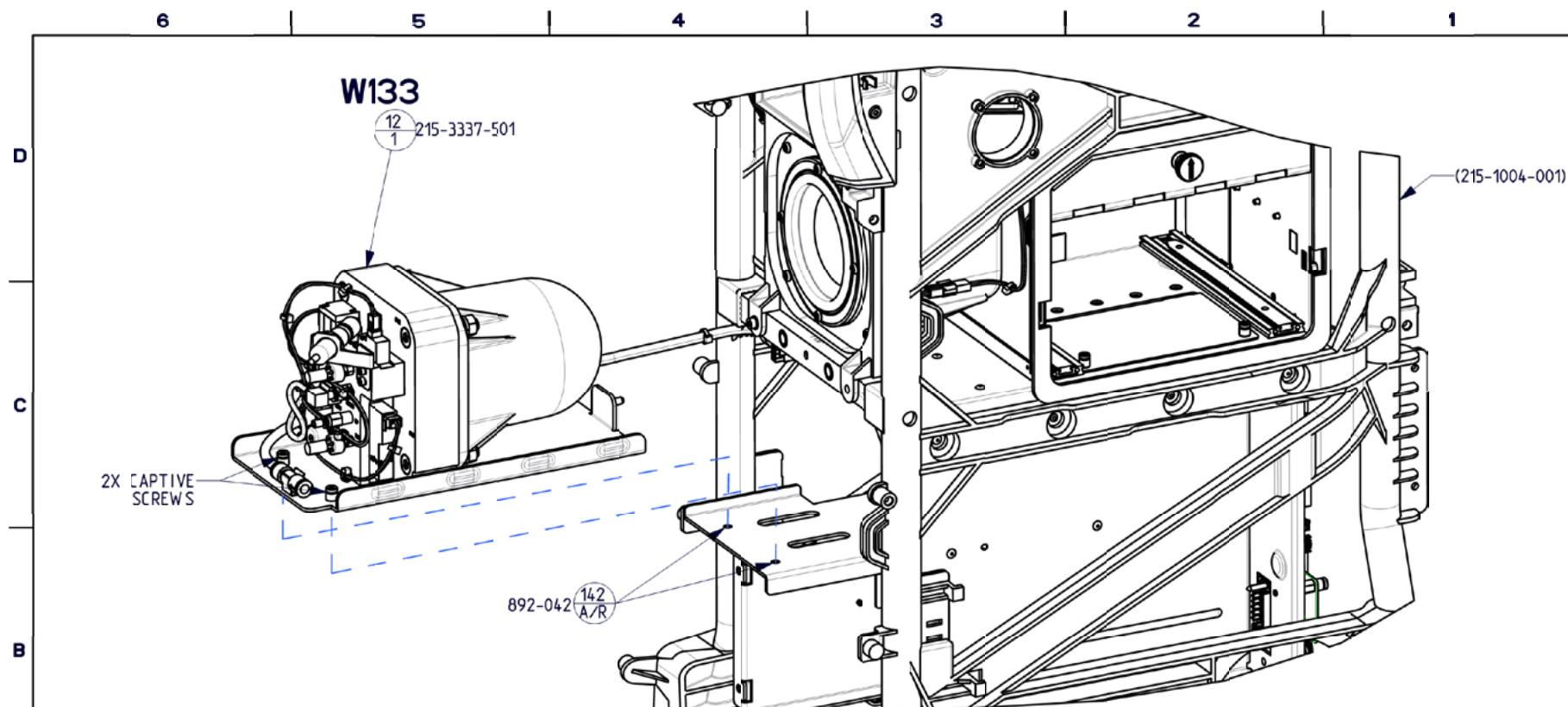








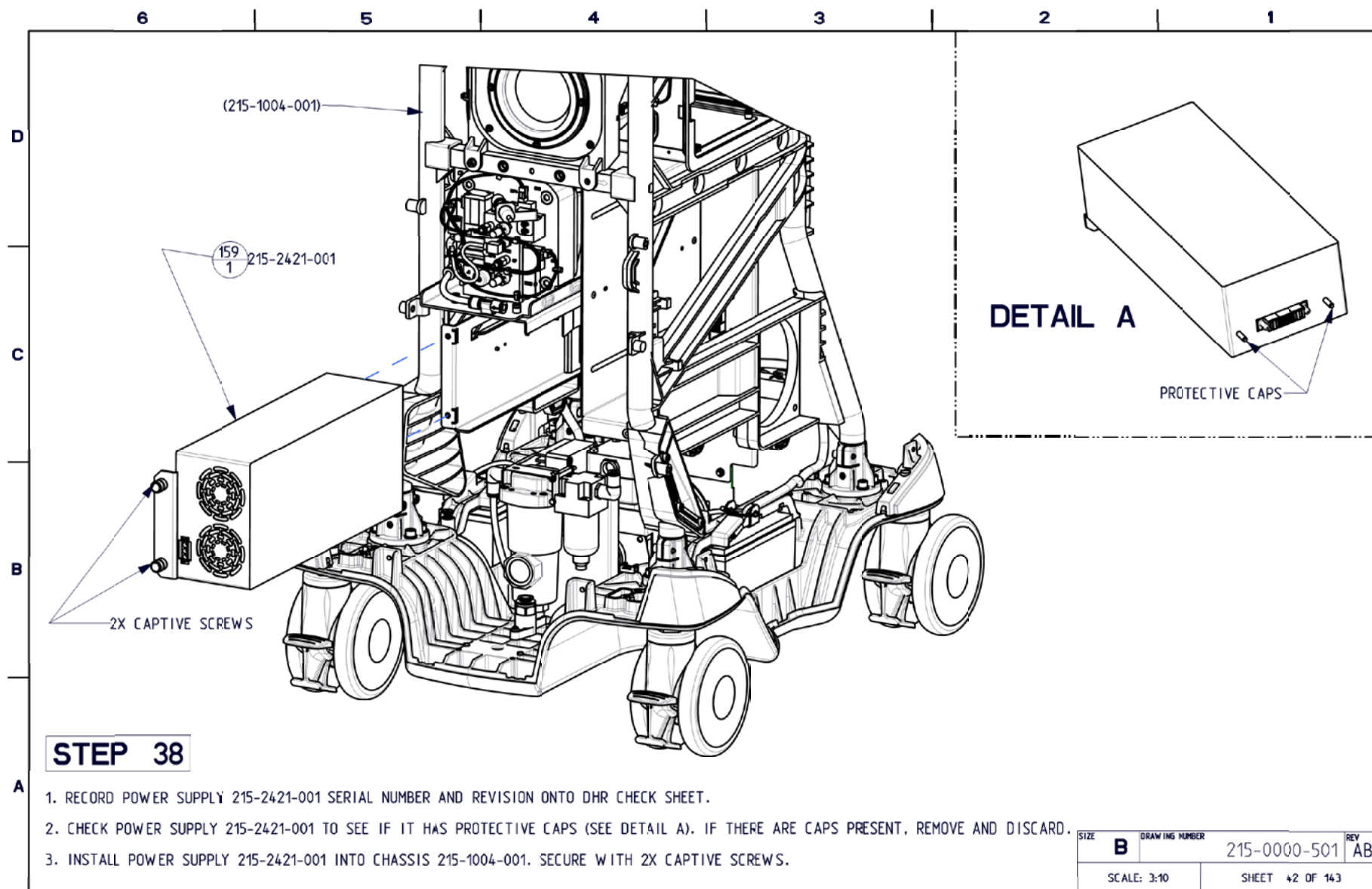


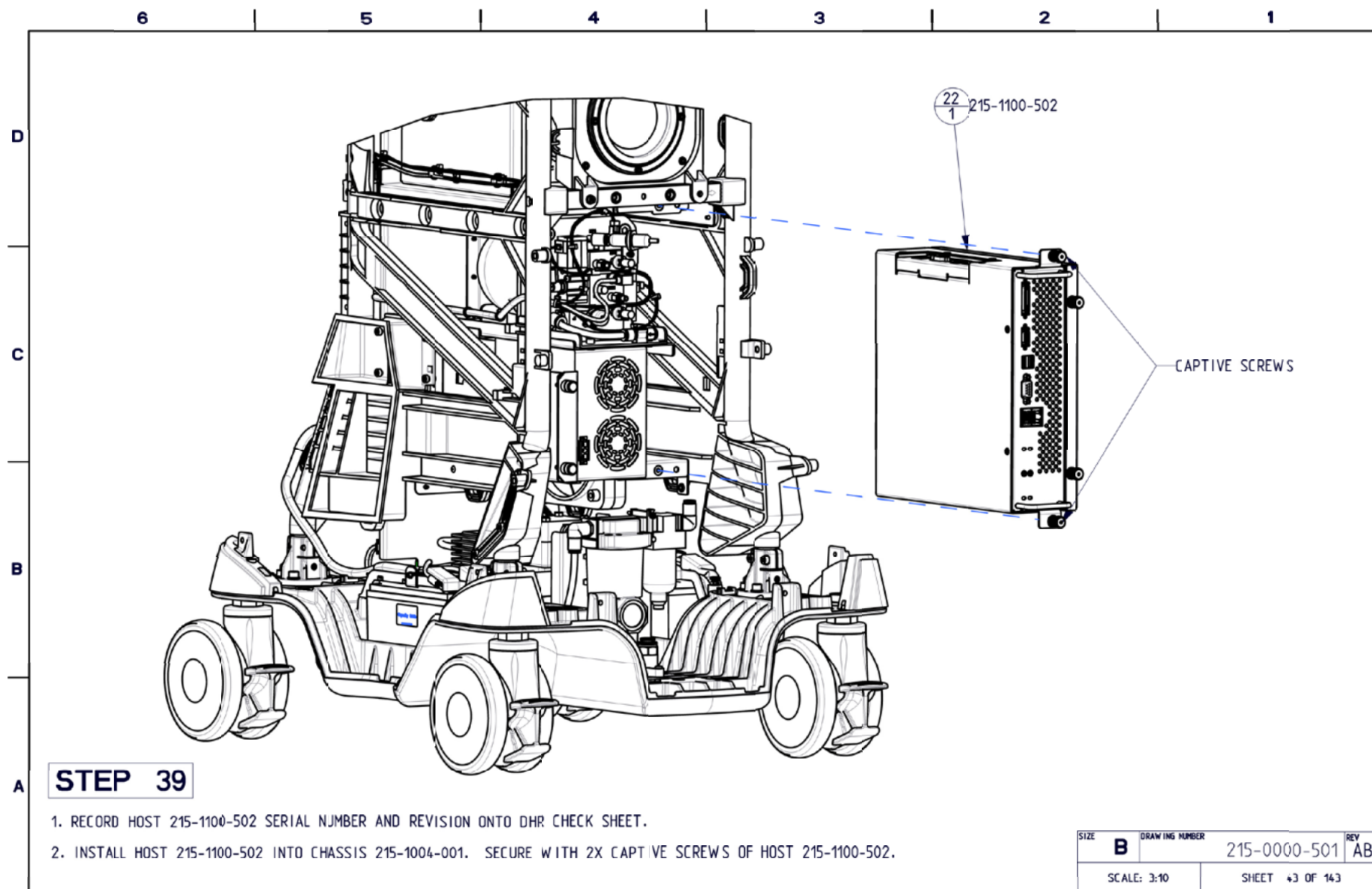


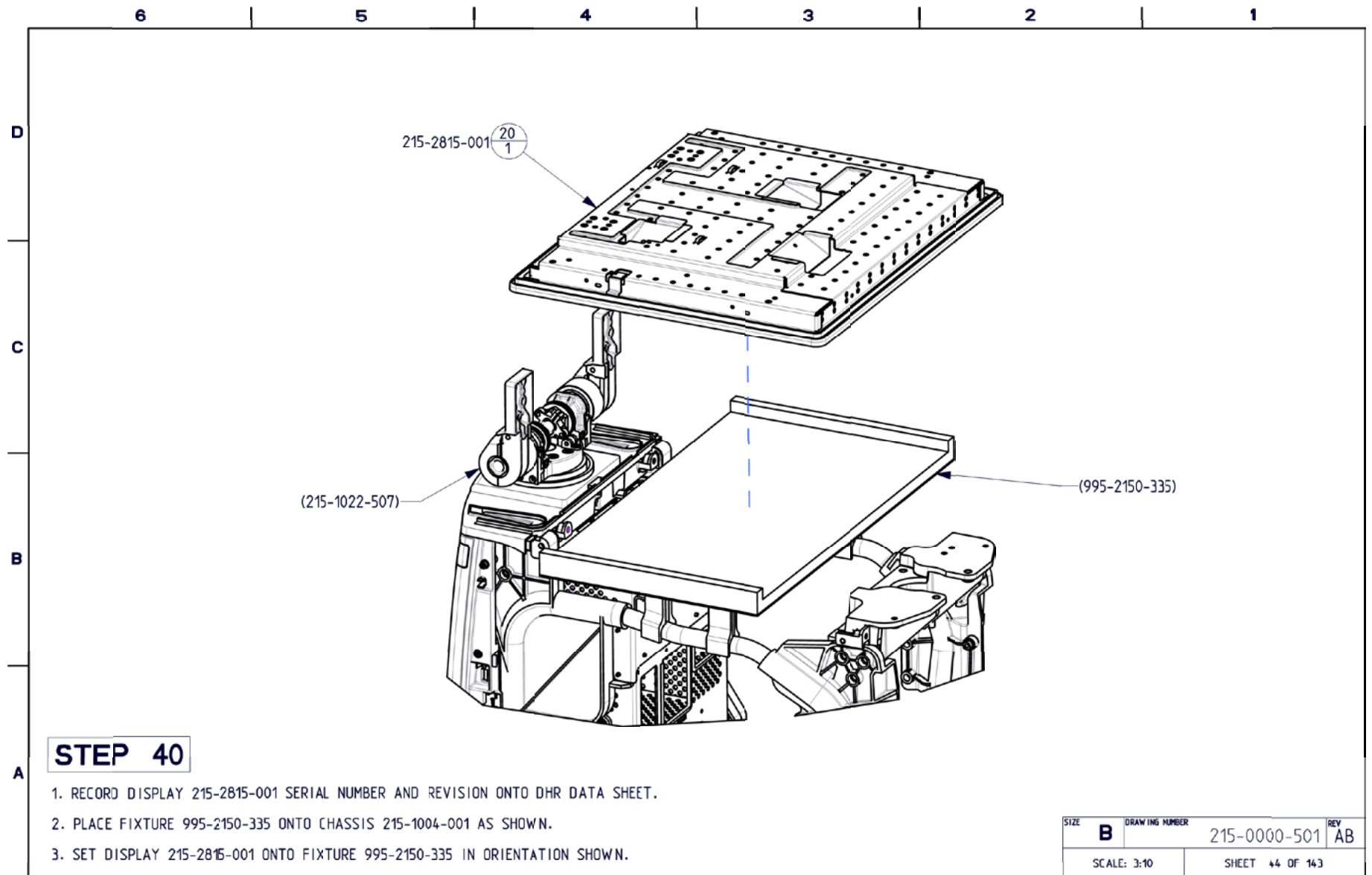
STEP 37

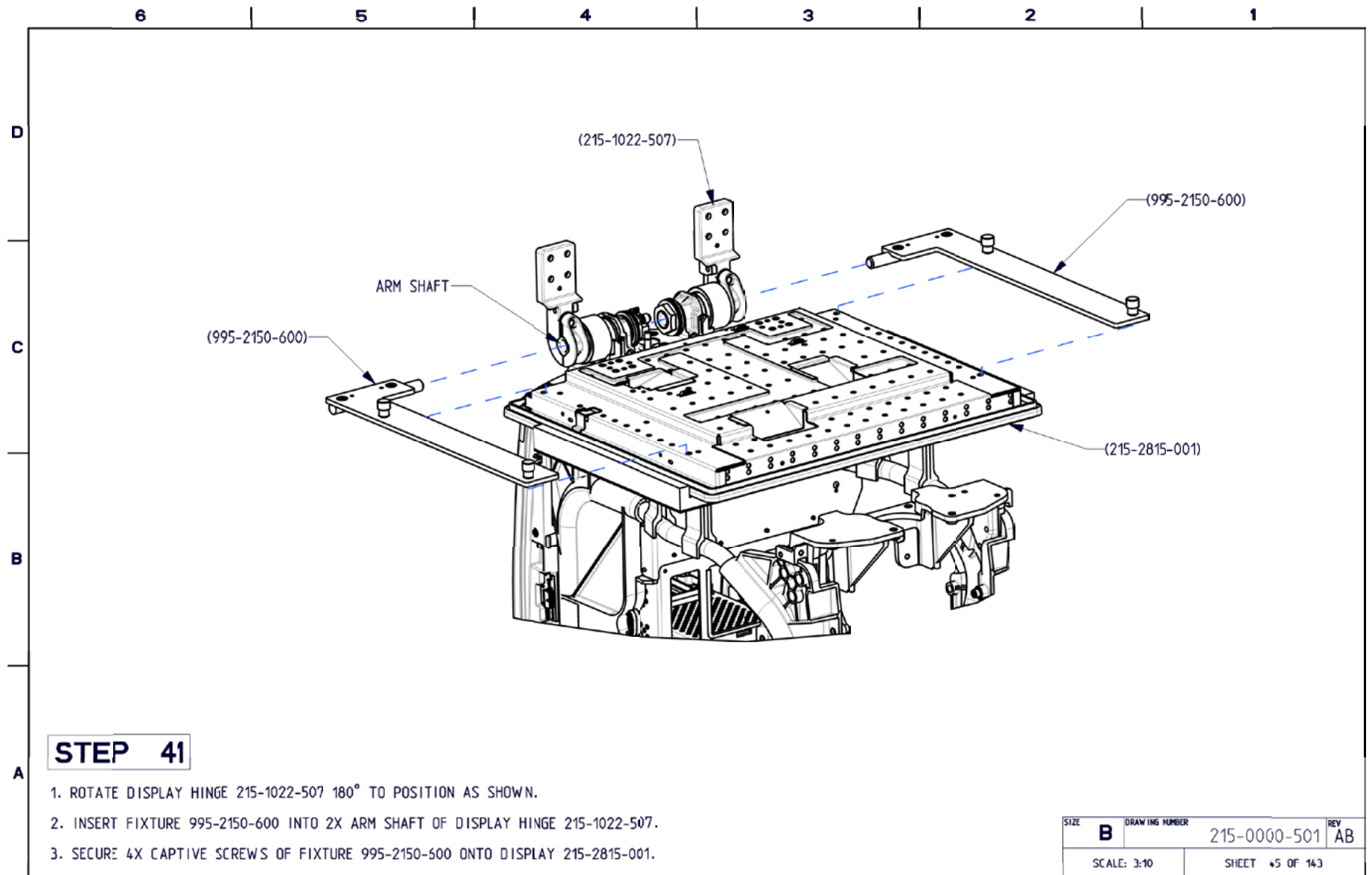
1. RECORD PNEUMATIC MANIFOLD REVISION 215-3337-501 ONTO DHR CHECK SHEET.
2. ADD A SMALL AMOUNT OF LOCTITE 892-042 TO 2X PEM NUTS OF CHASSIS 215-1004-001.
3. INSTALL PNEUMATICS MANIFOLD 215-3337-501 INTO CHASSIS 215-1004-001. SECURE WITH 2X CAPTIVE SCREWS.
4. ROUTE MANIFOLD CABLE W133 THRU CONSOLE TO MF10 PCB PER CABLE ROUTING FILE 215-0000-501_PROC_CABLE.ASM "W133".
5. ENSURE TUBING CONNECTIONS ON MANIFOLD 215-3337-501 ARE SECURE BY PULLING SLIGHTLY ON THE TUBING AT THE CONNECTION POINTS. IF NOT SECURE, RE-INSTALL TUBING FIRMLY AND DOCUMENT IN A PRR.

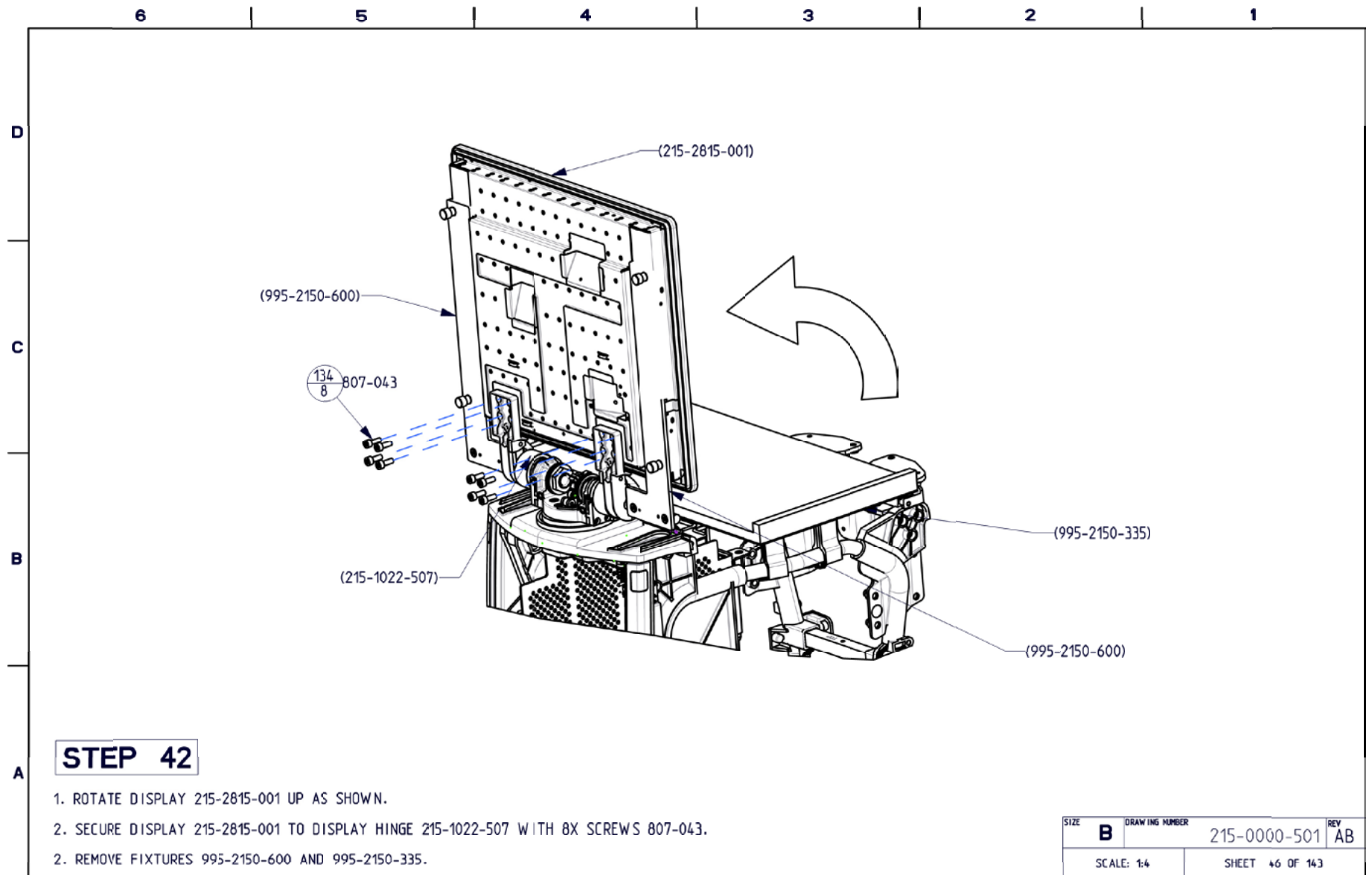
SIZE	DRAWING NUMBER	REV
B	215-0000-501	AB
SCALE: 2:5		SHEET 41 OF 143

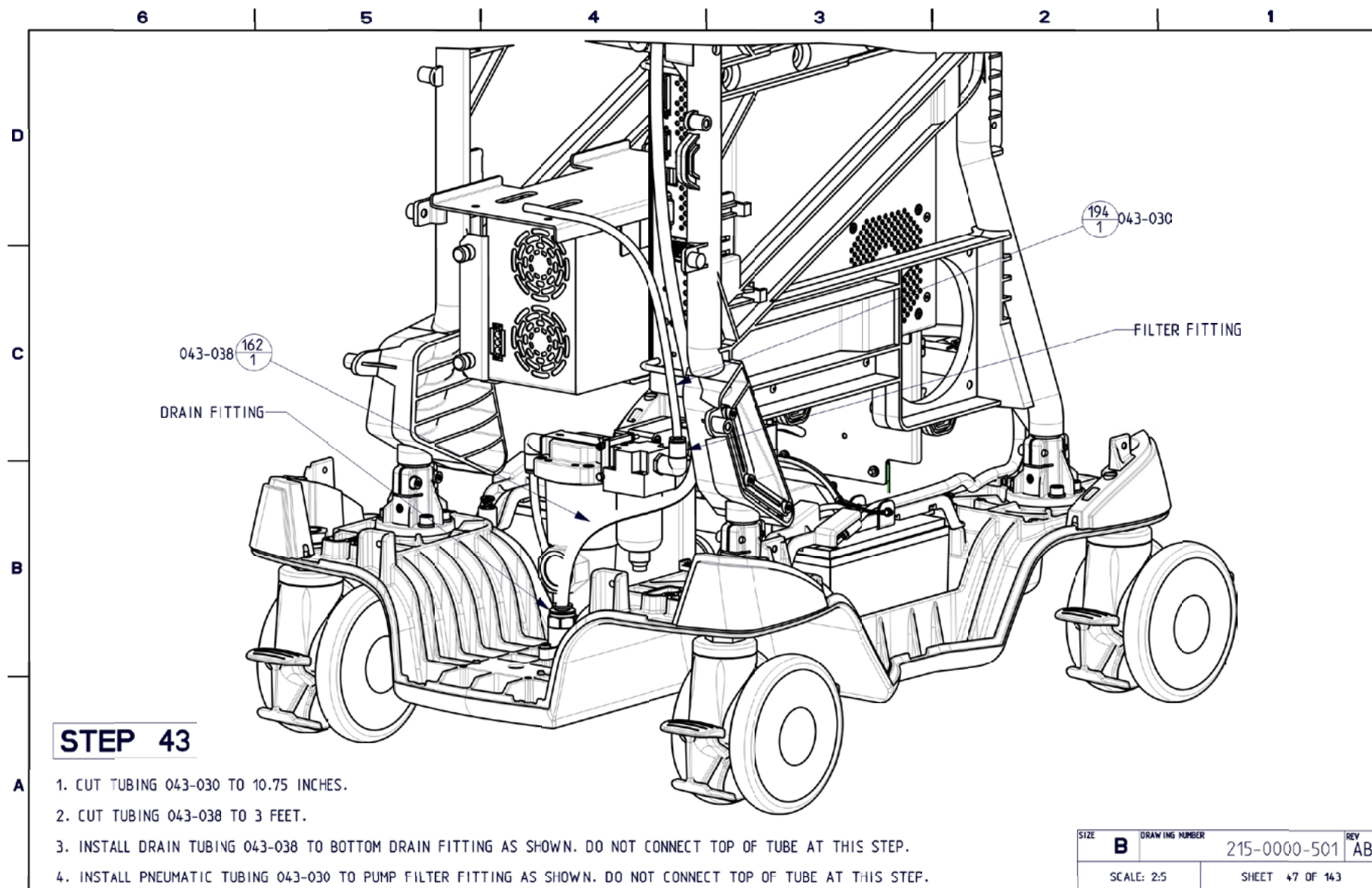


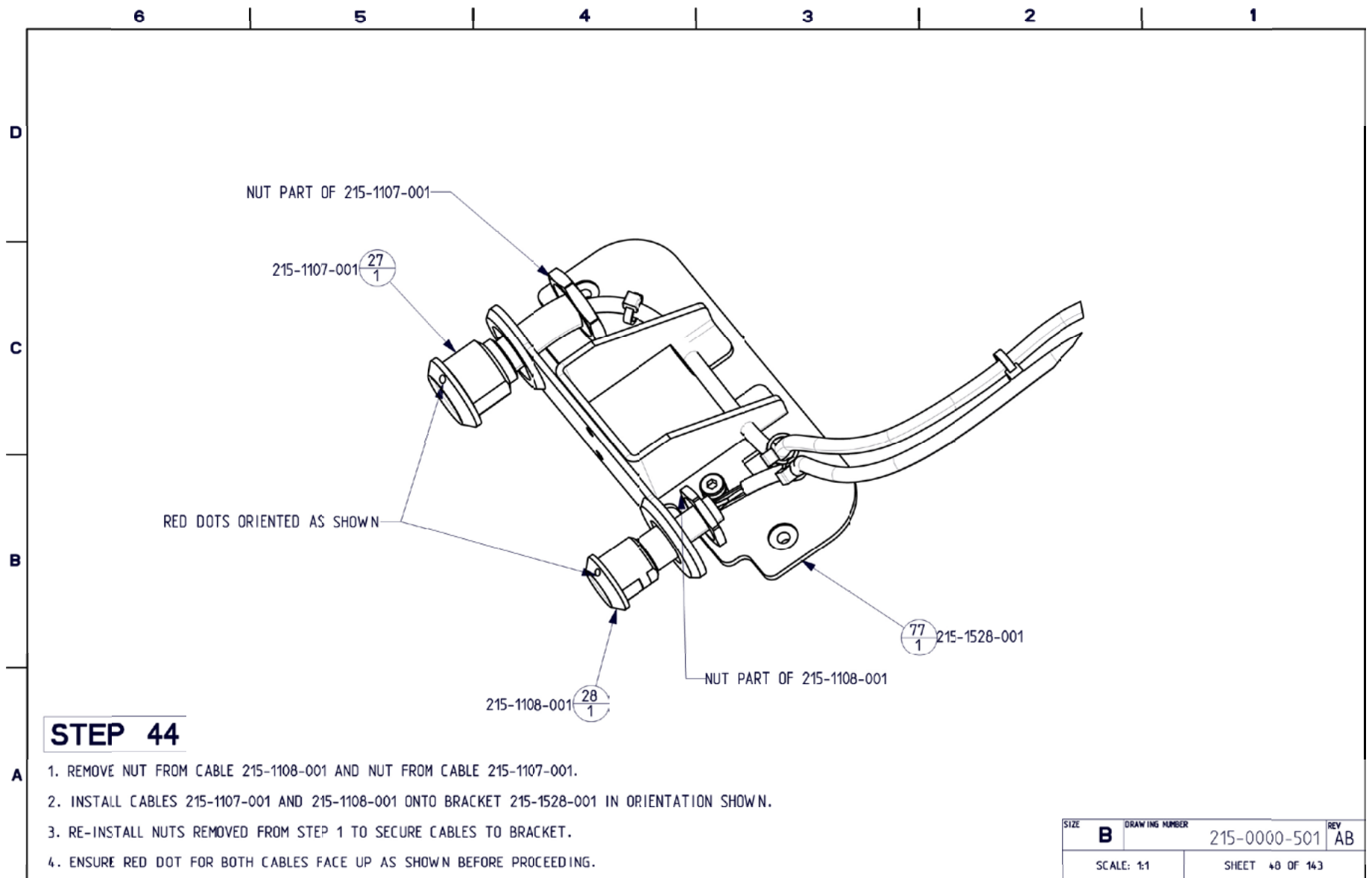


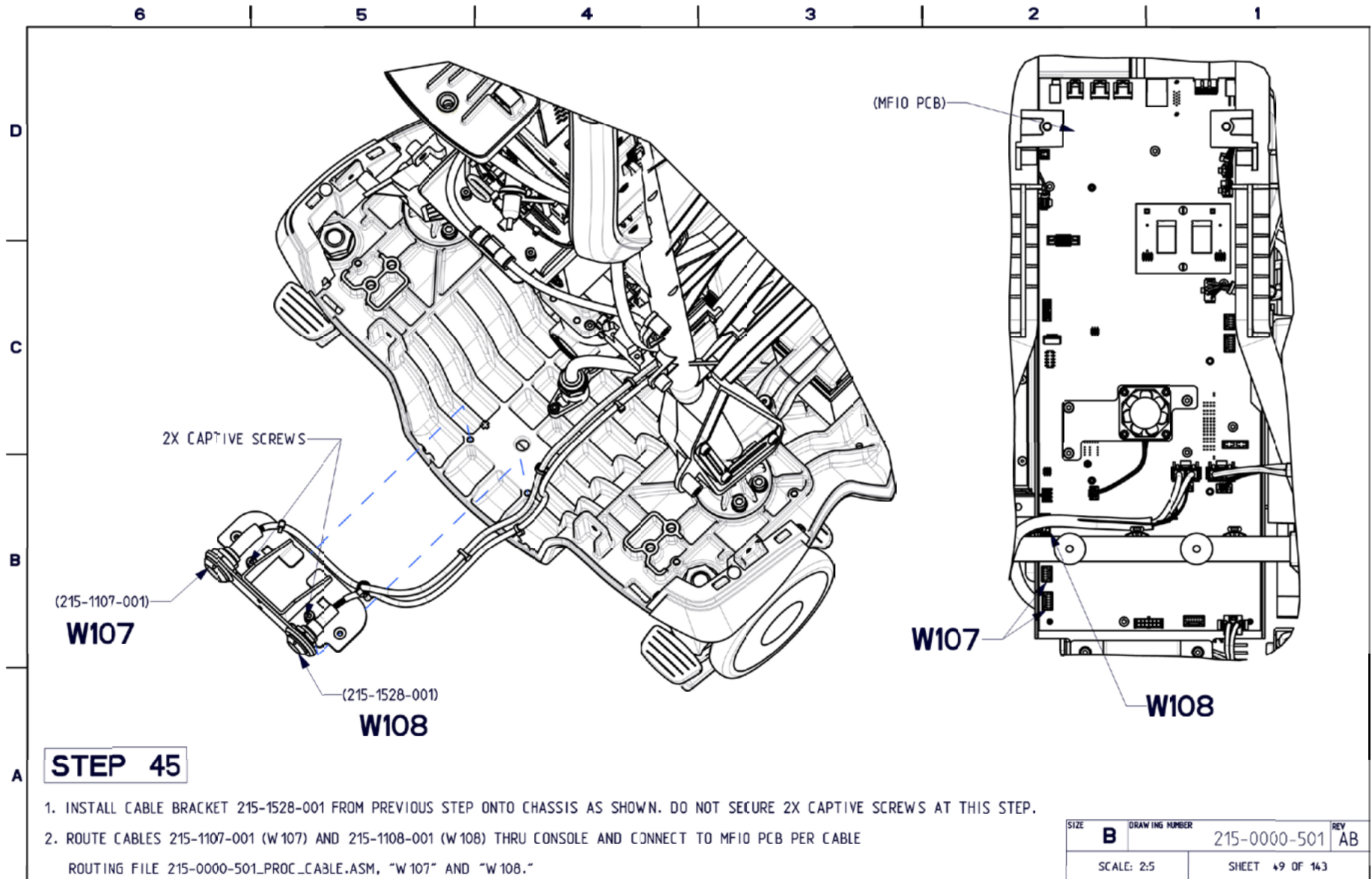


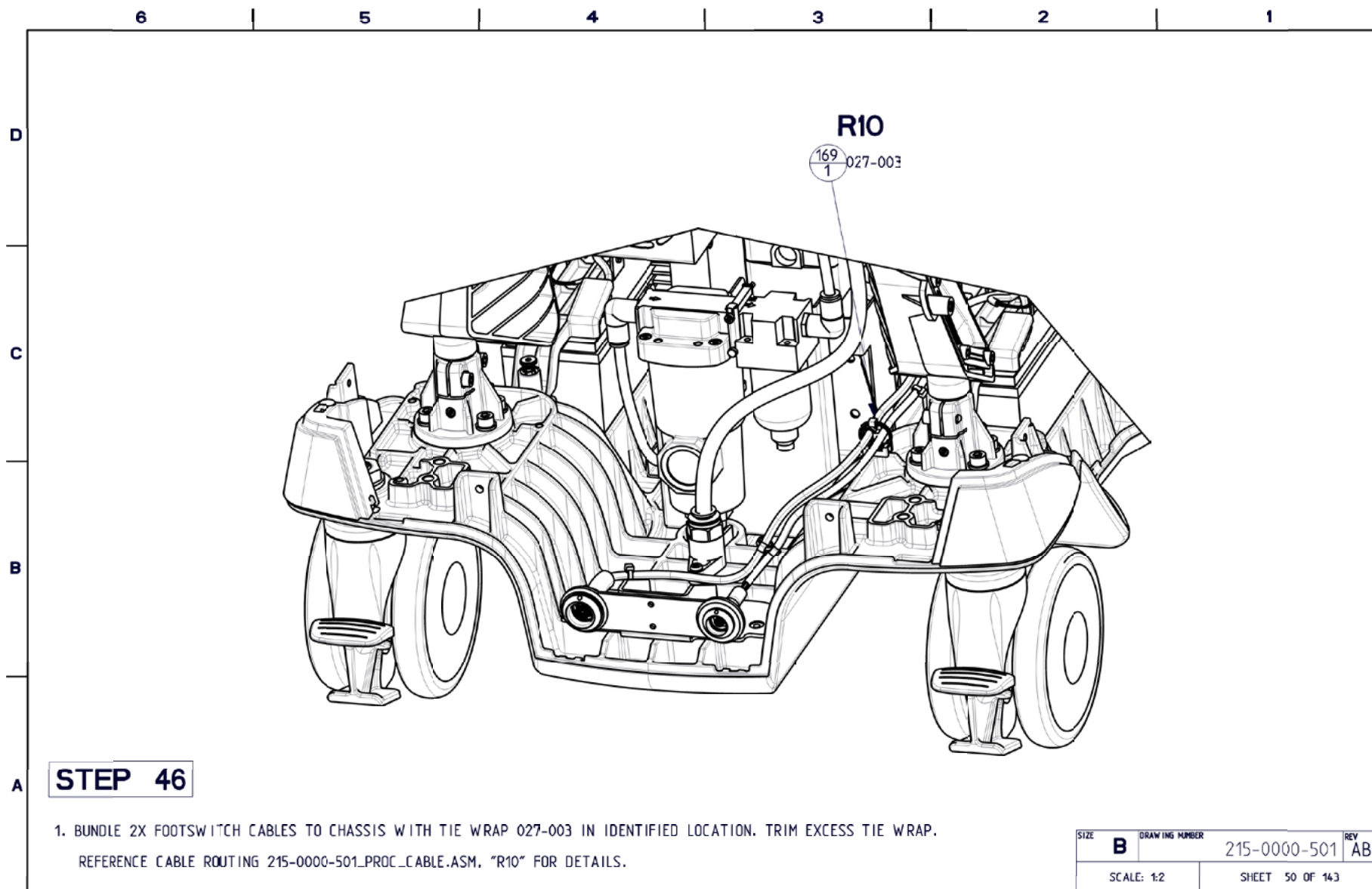


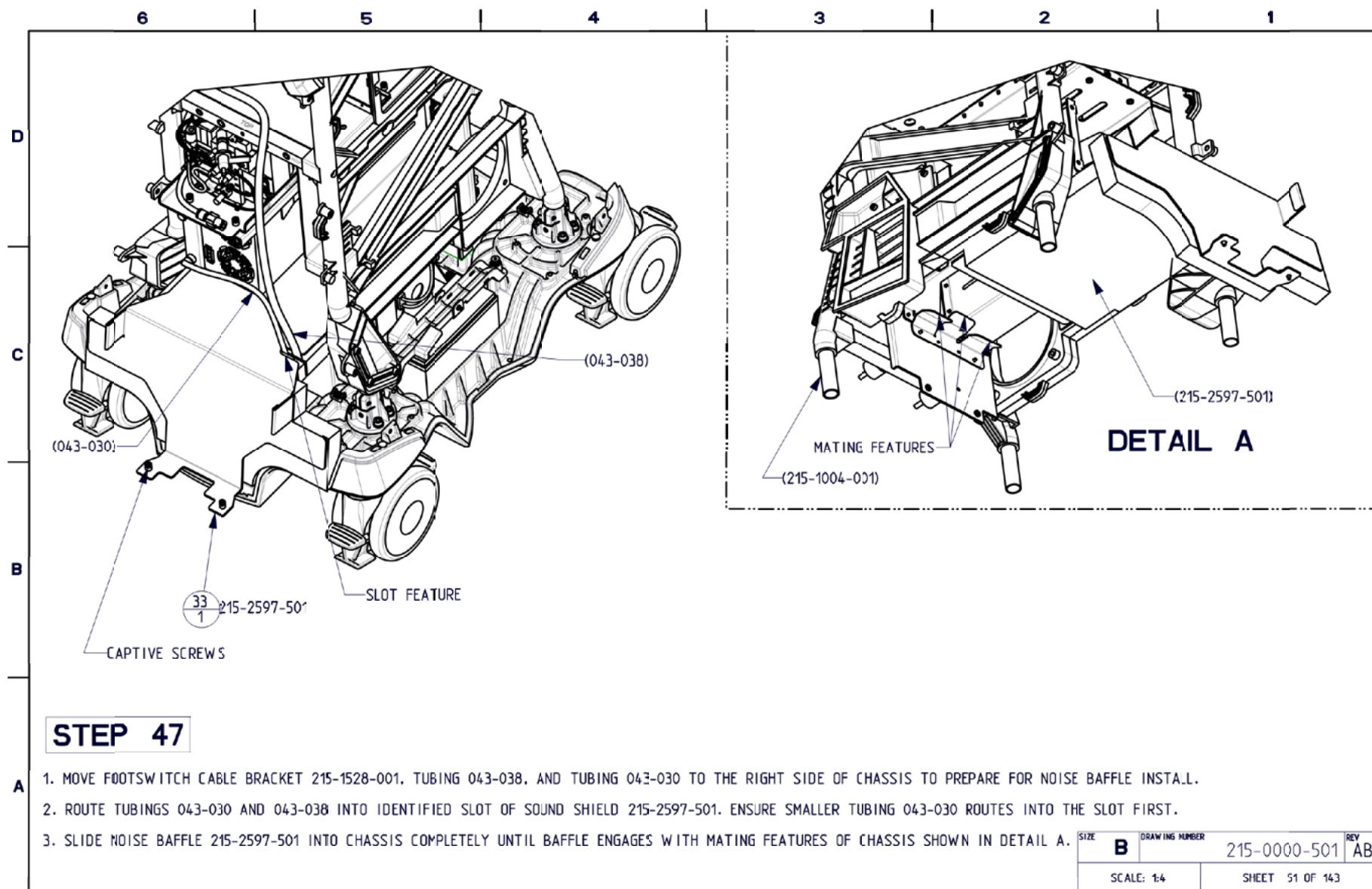


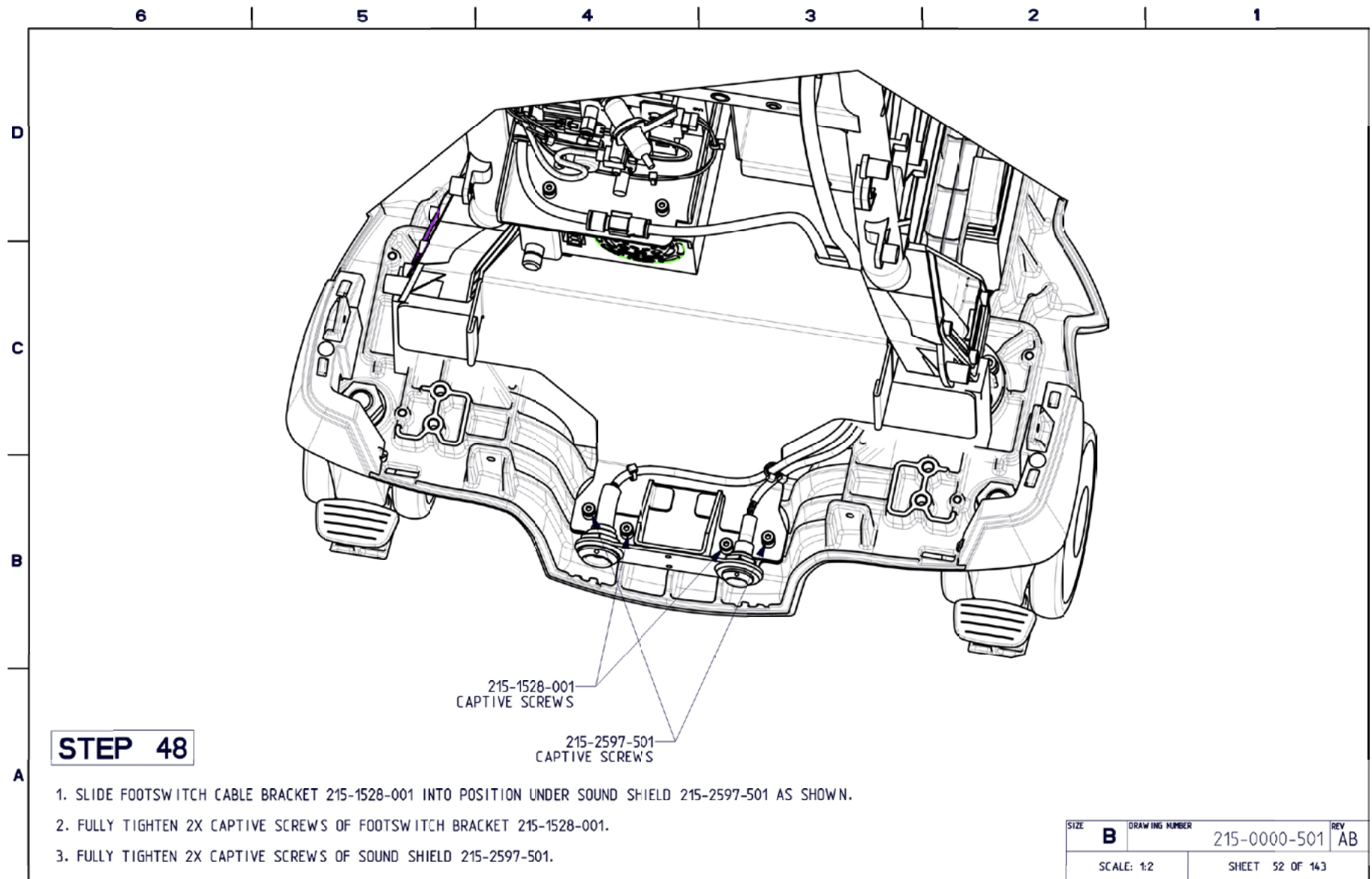


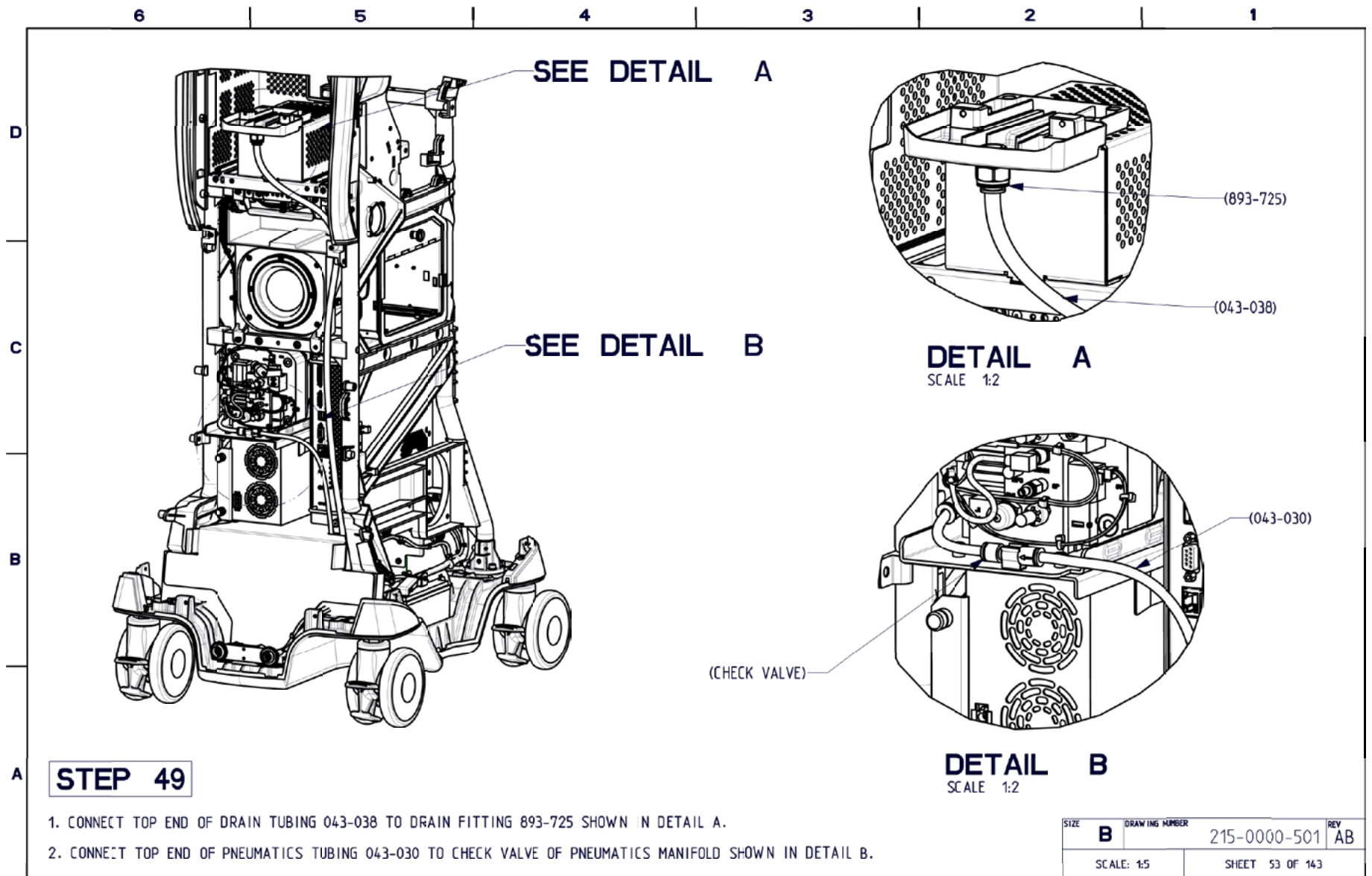


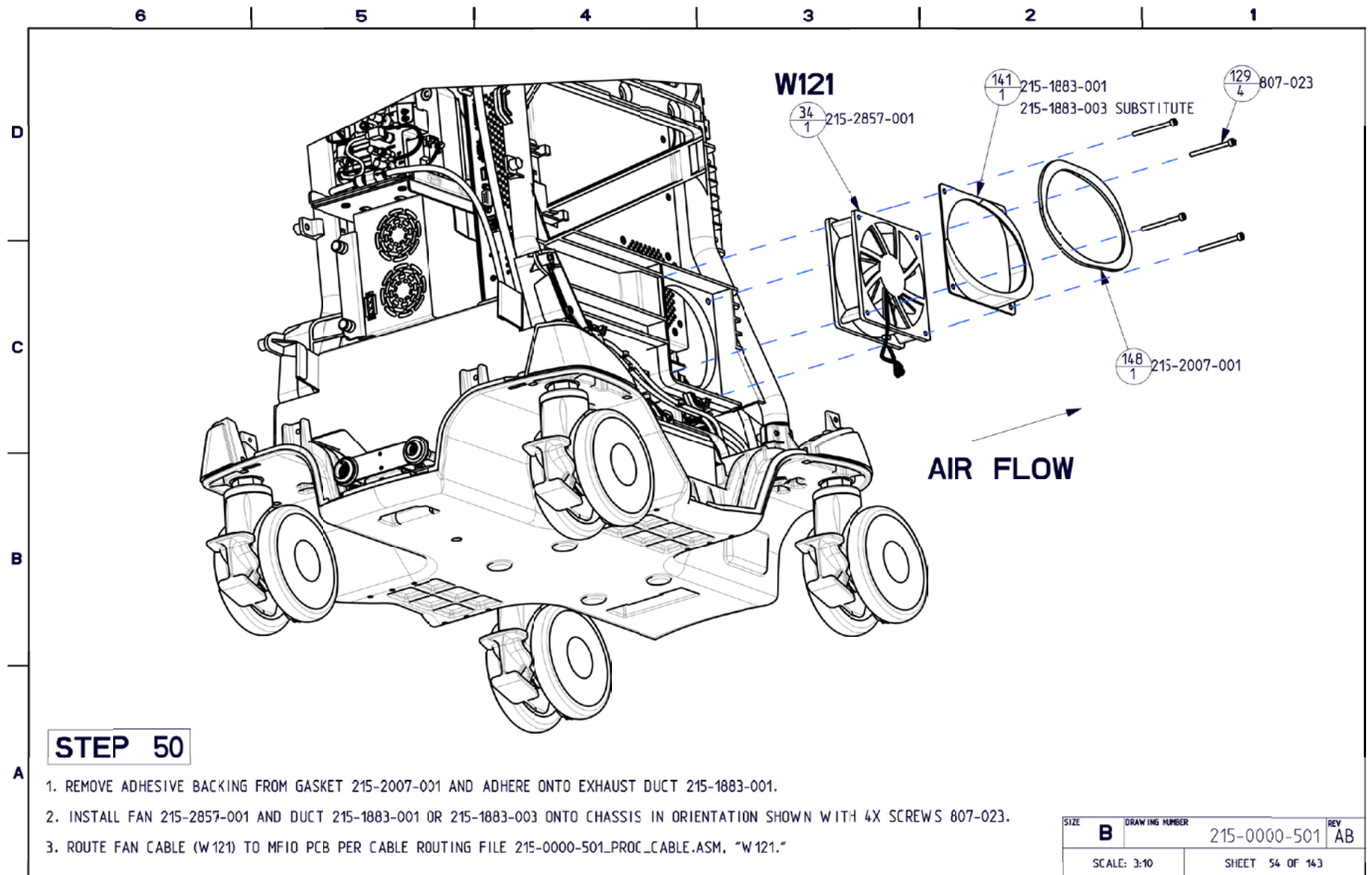


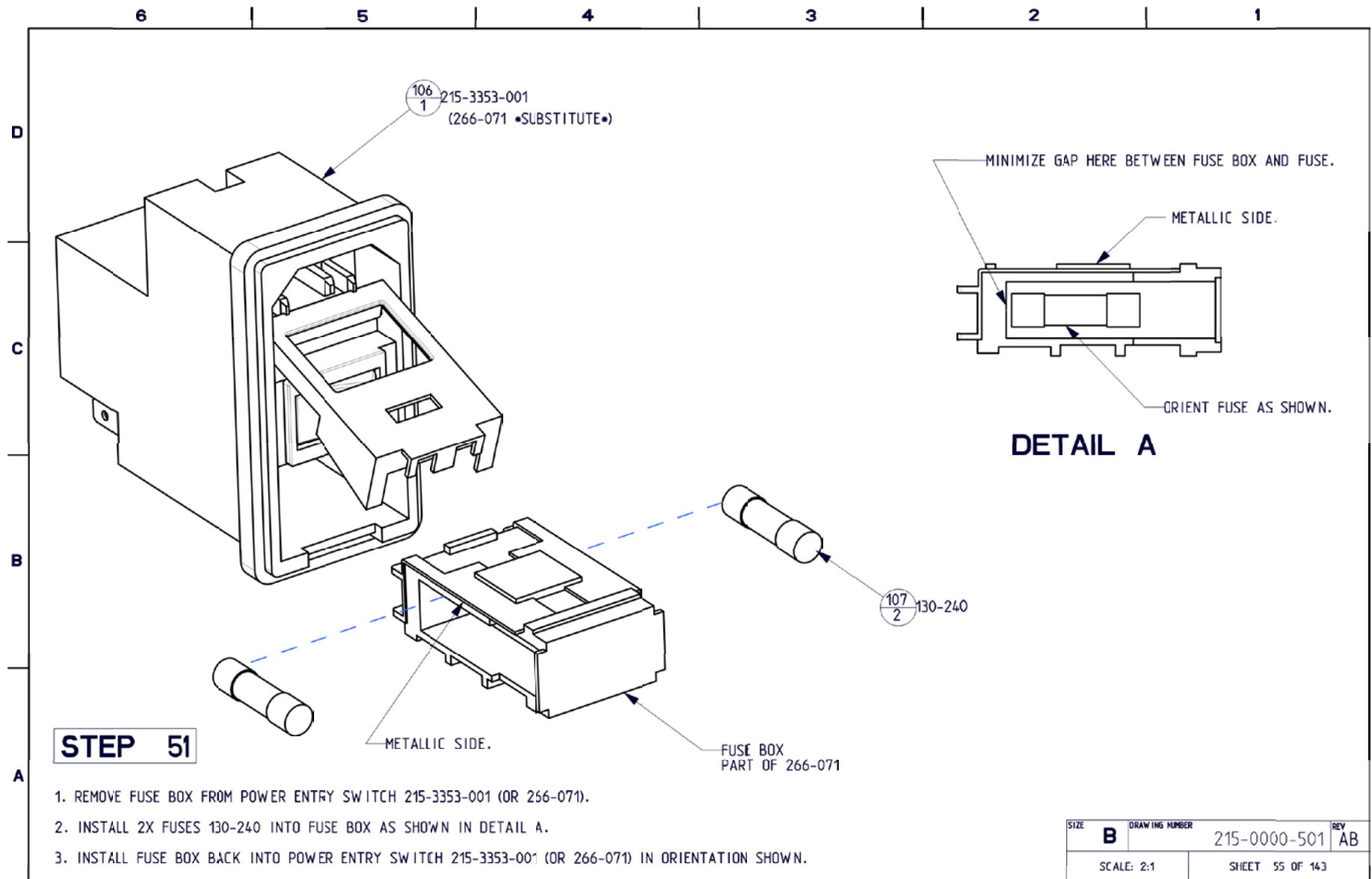


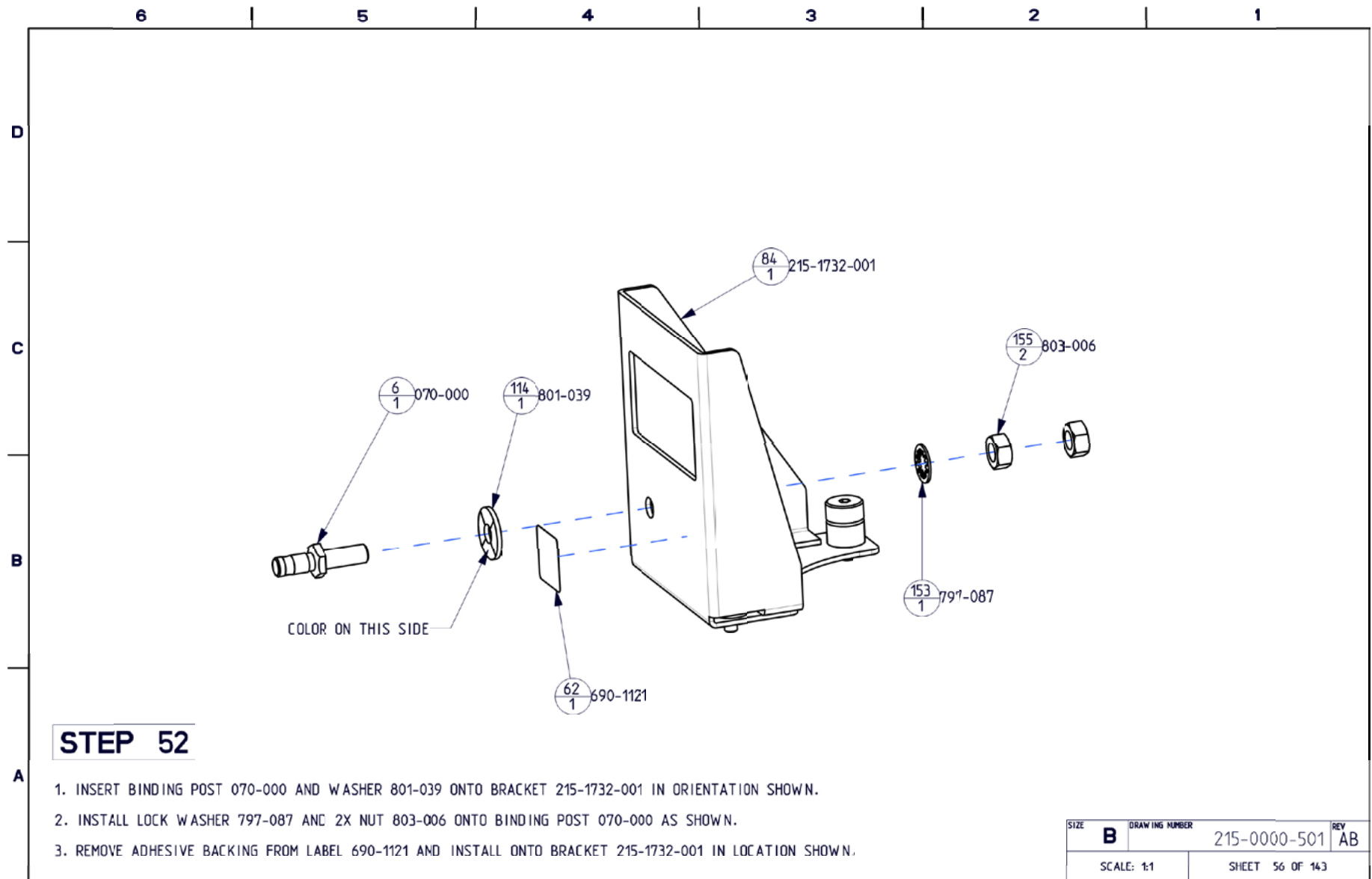


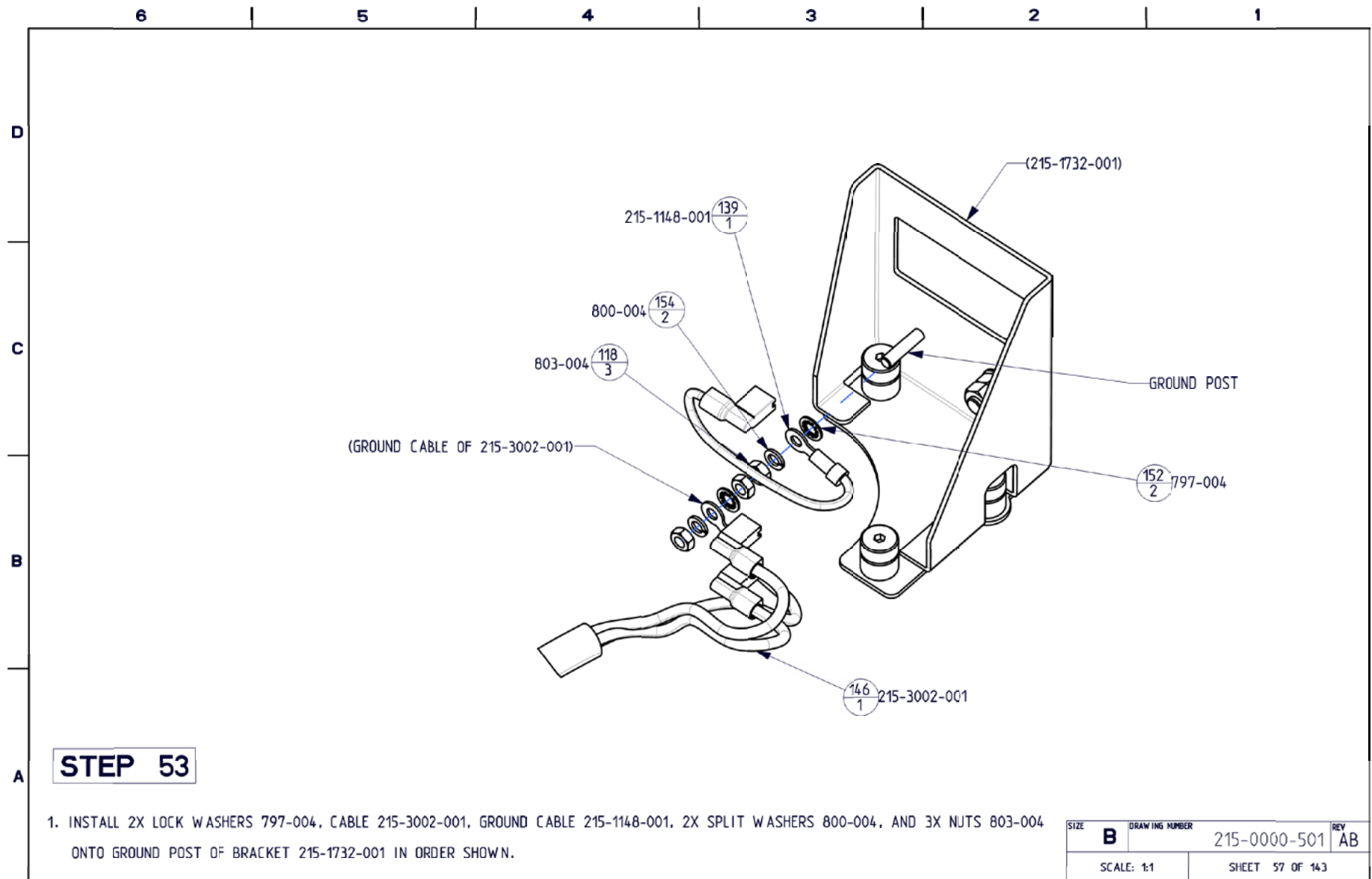


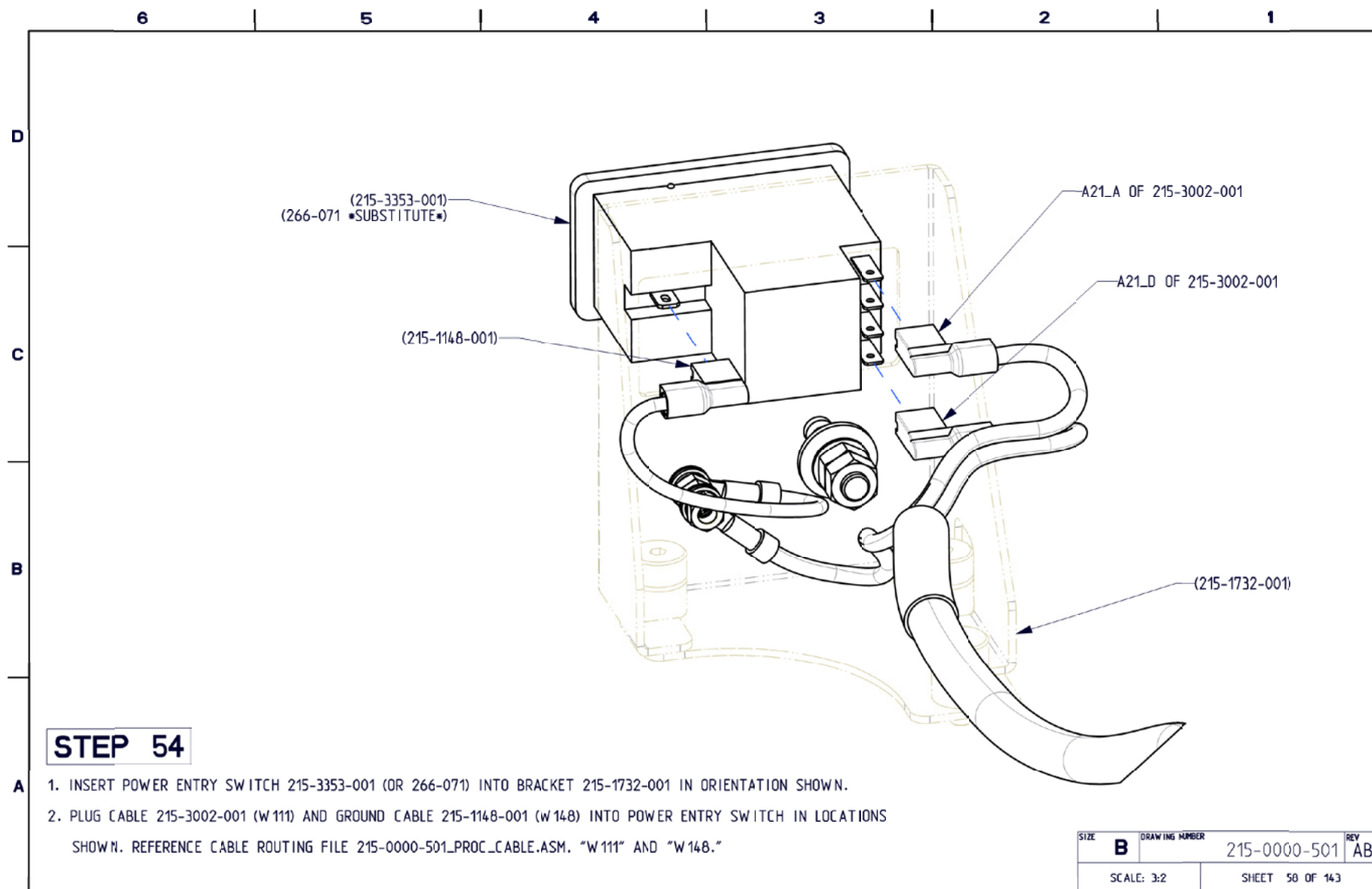


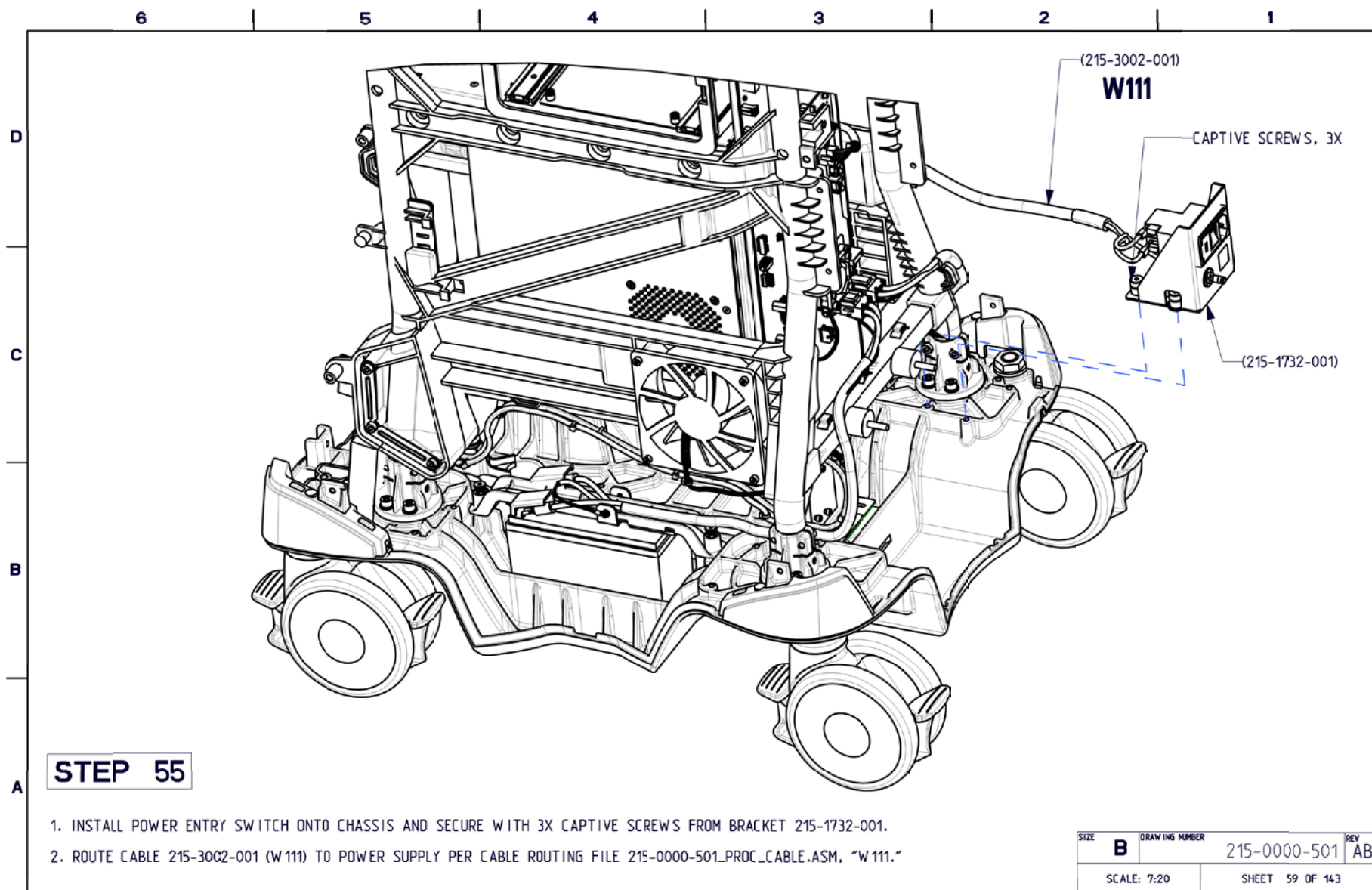


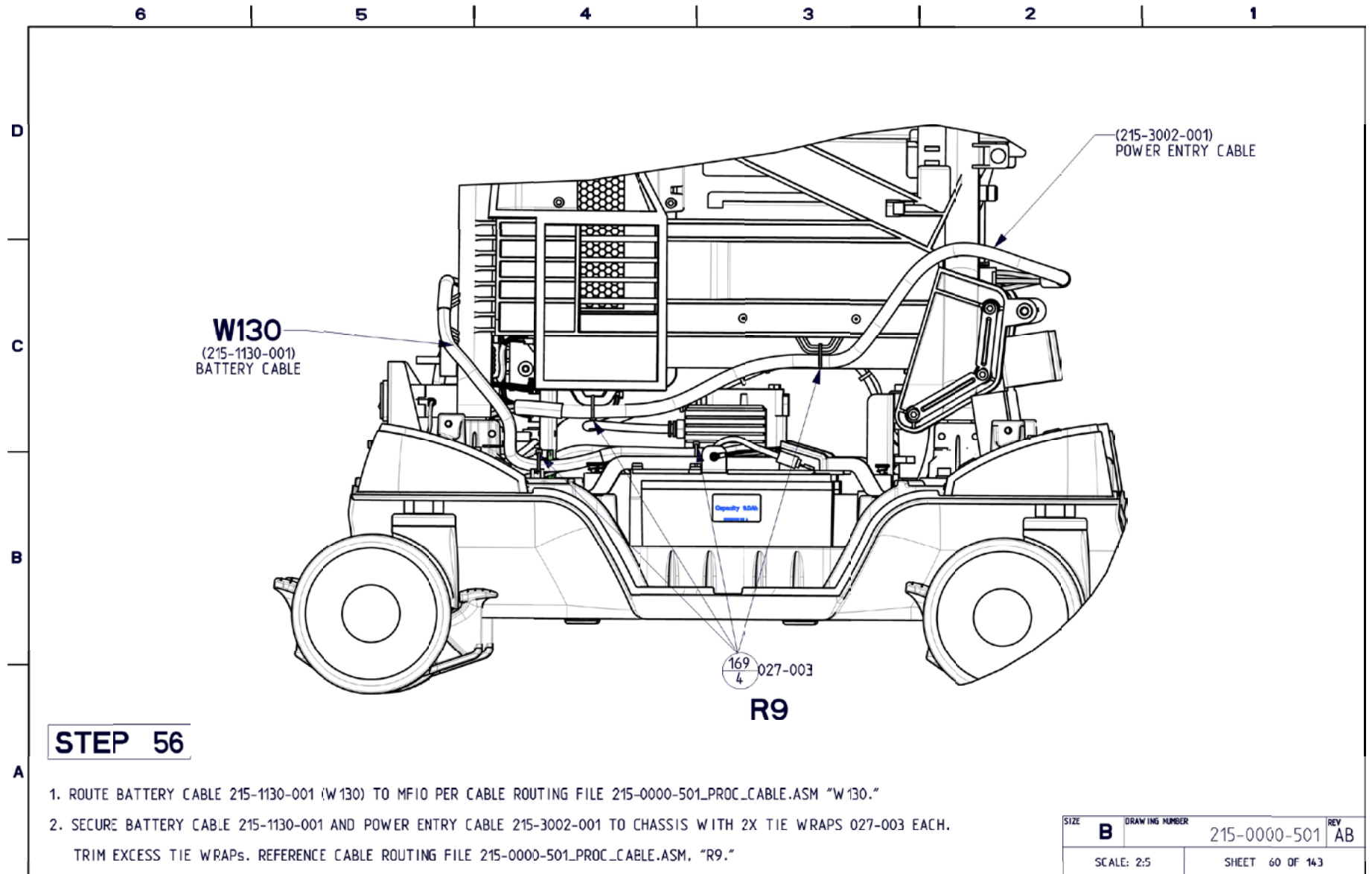


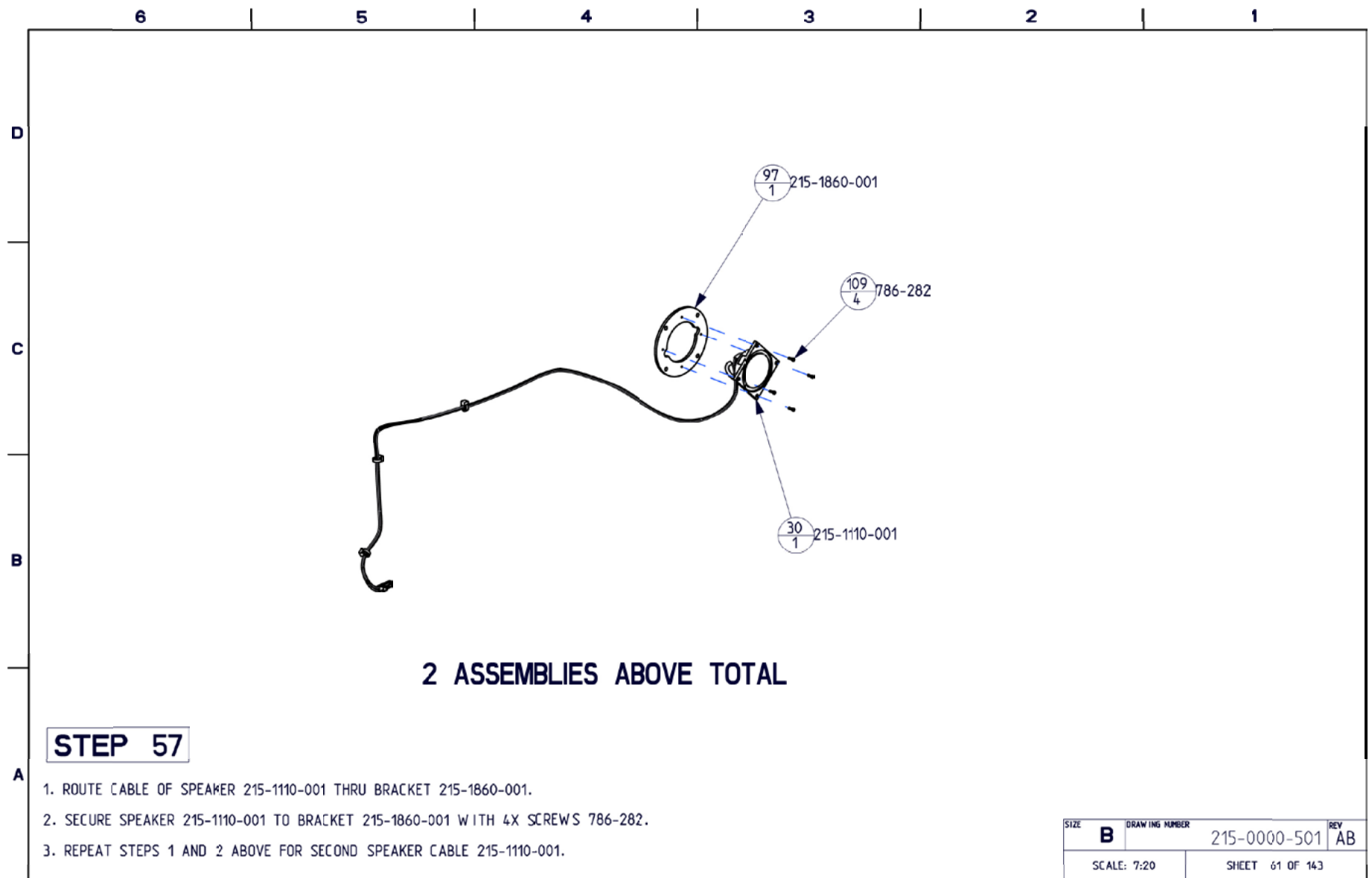


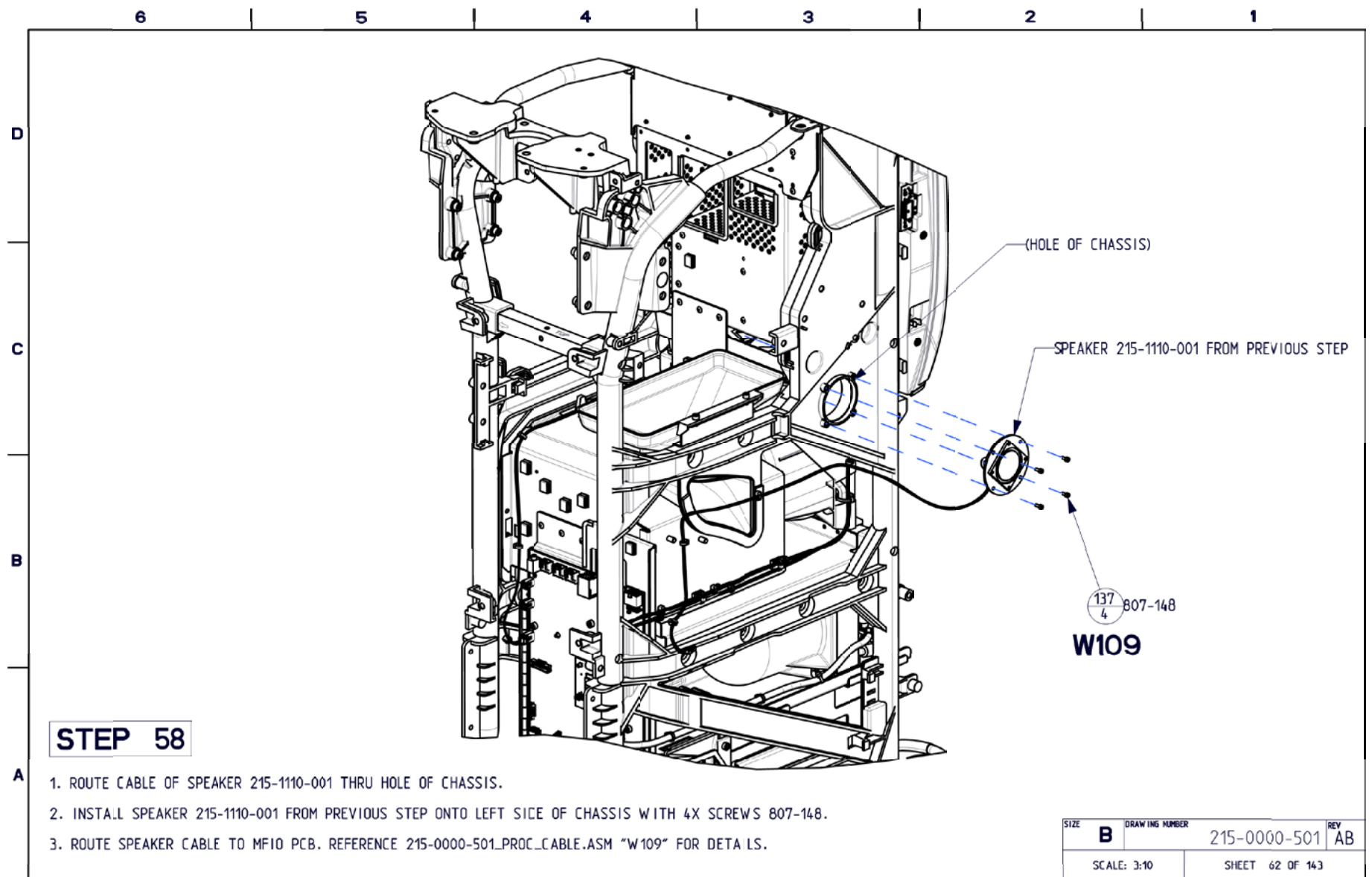


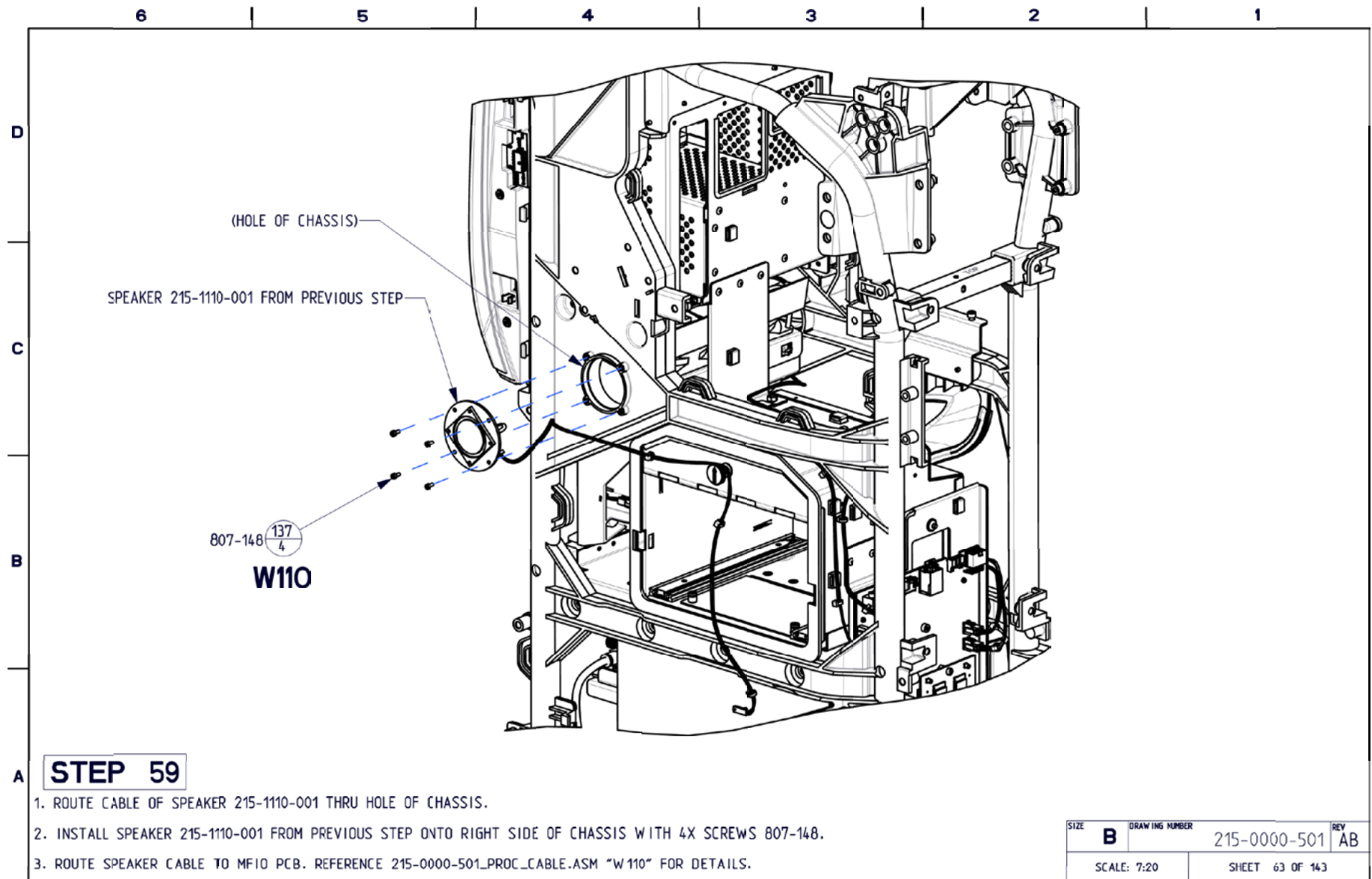


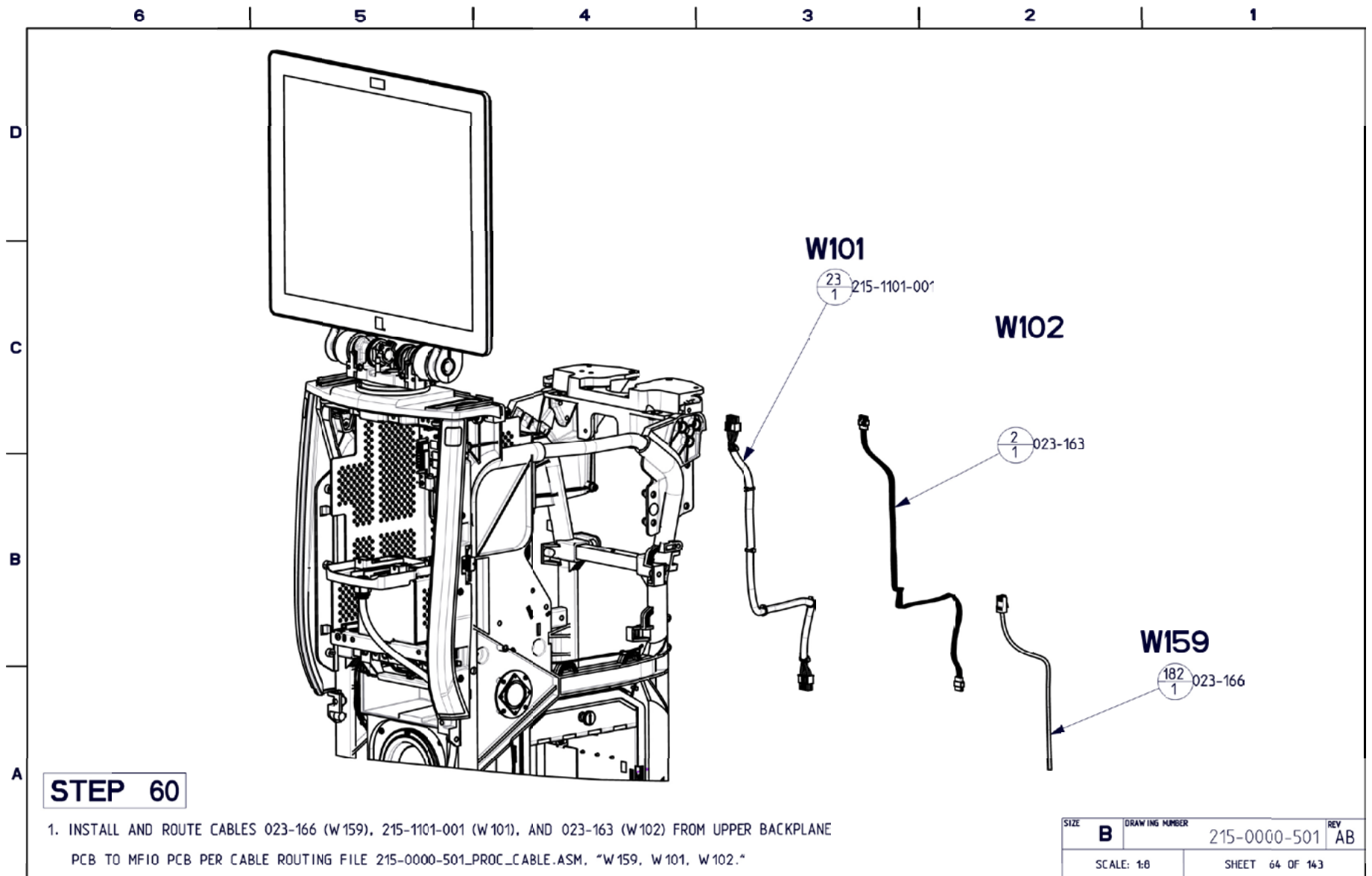


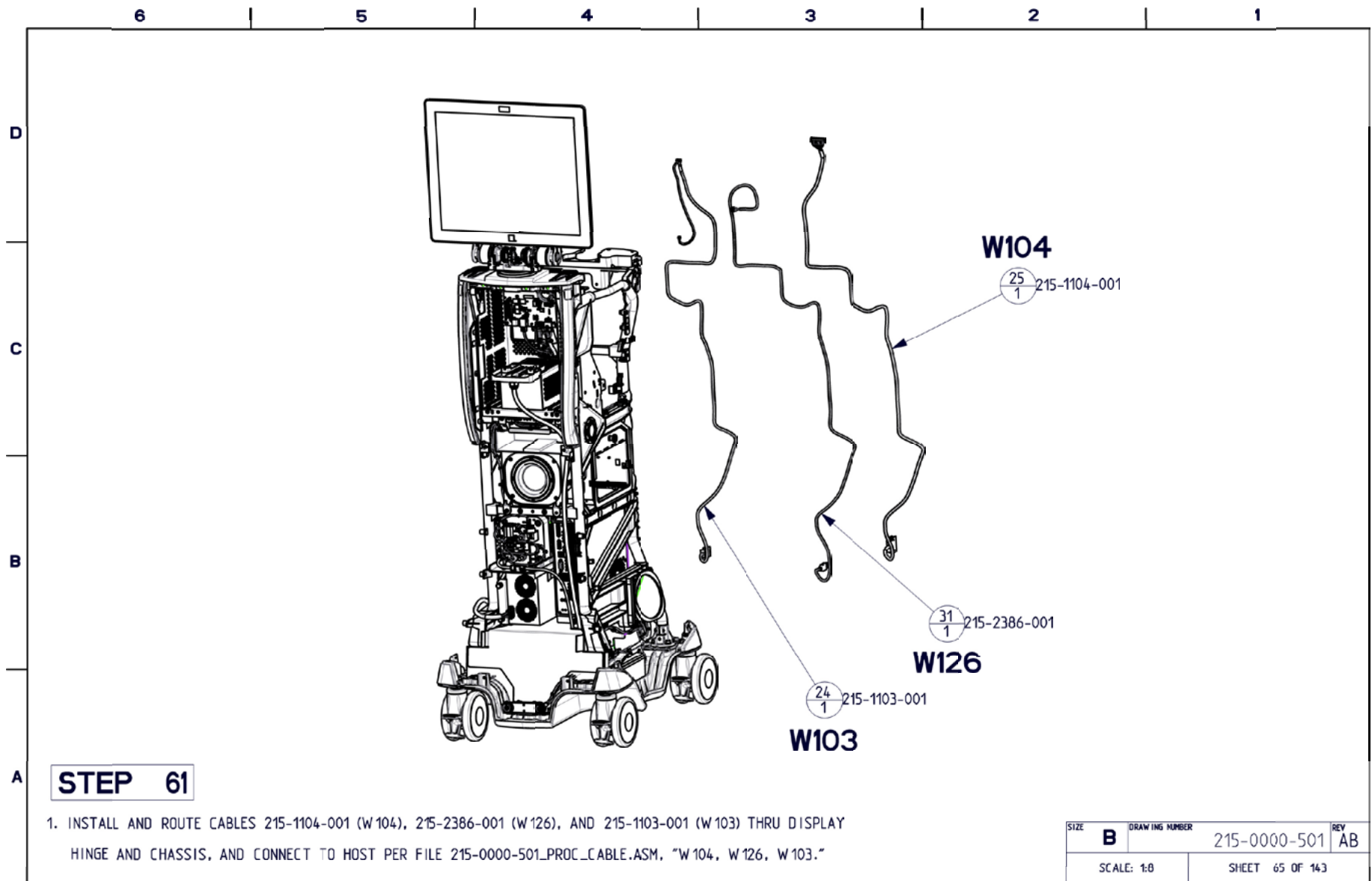










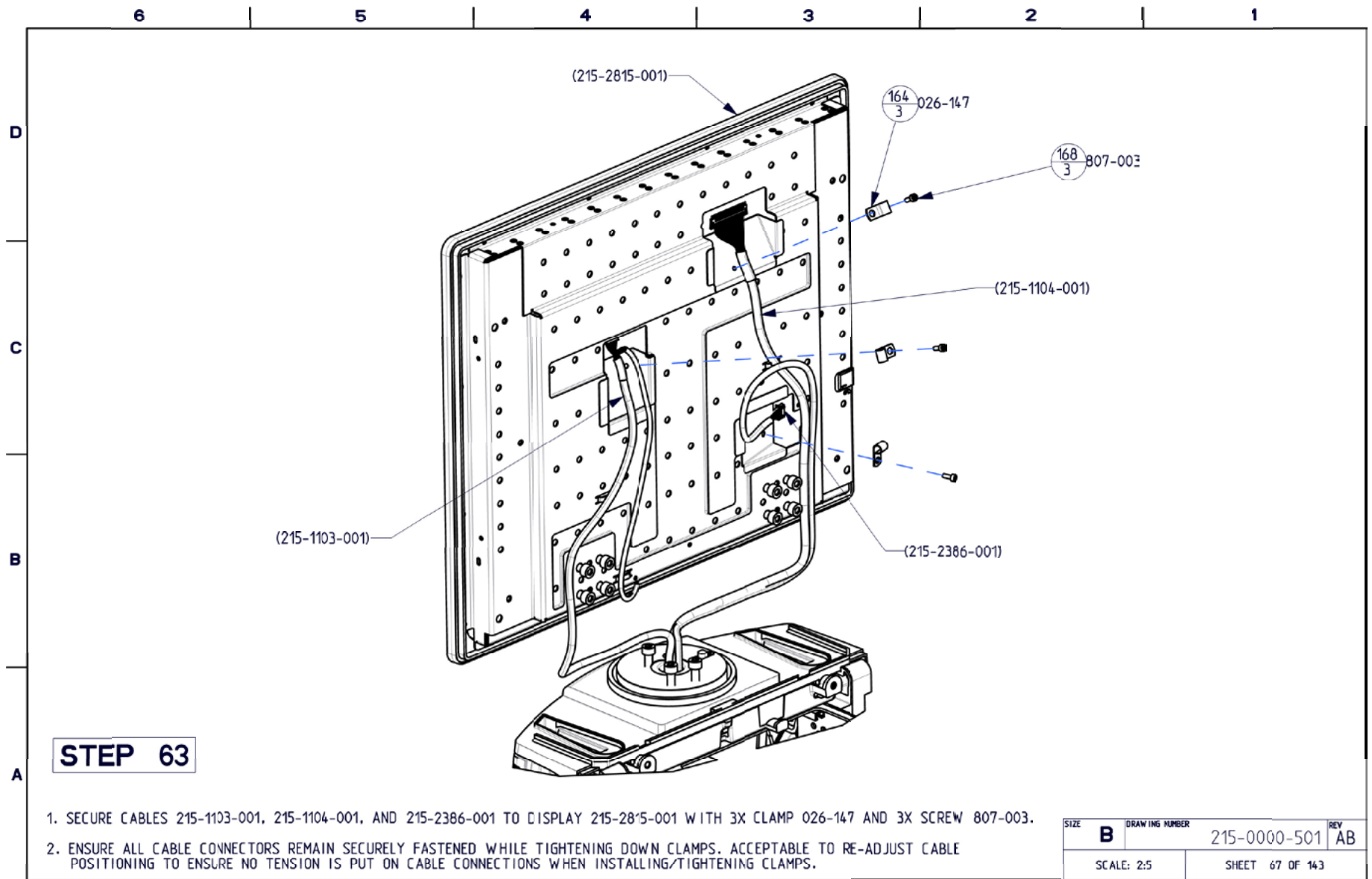


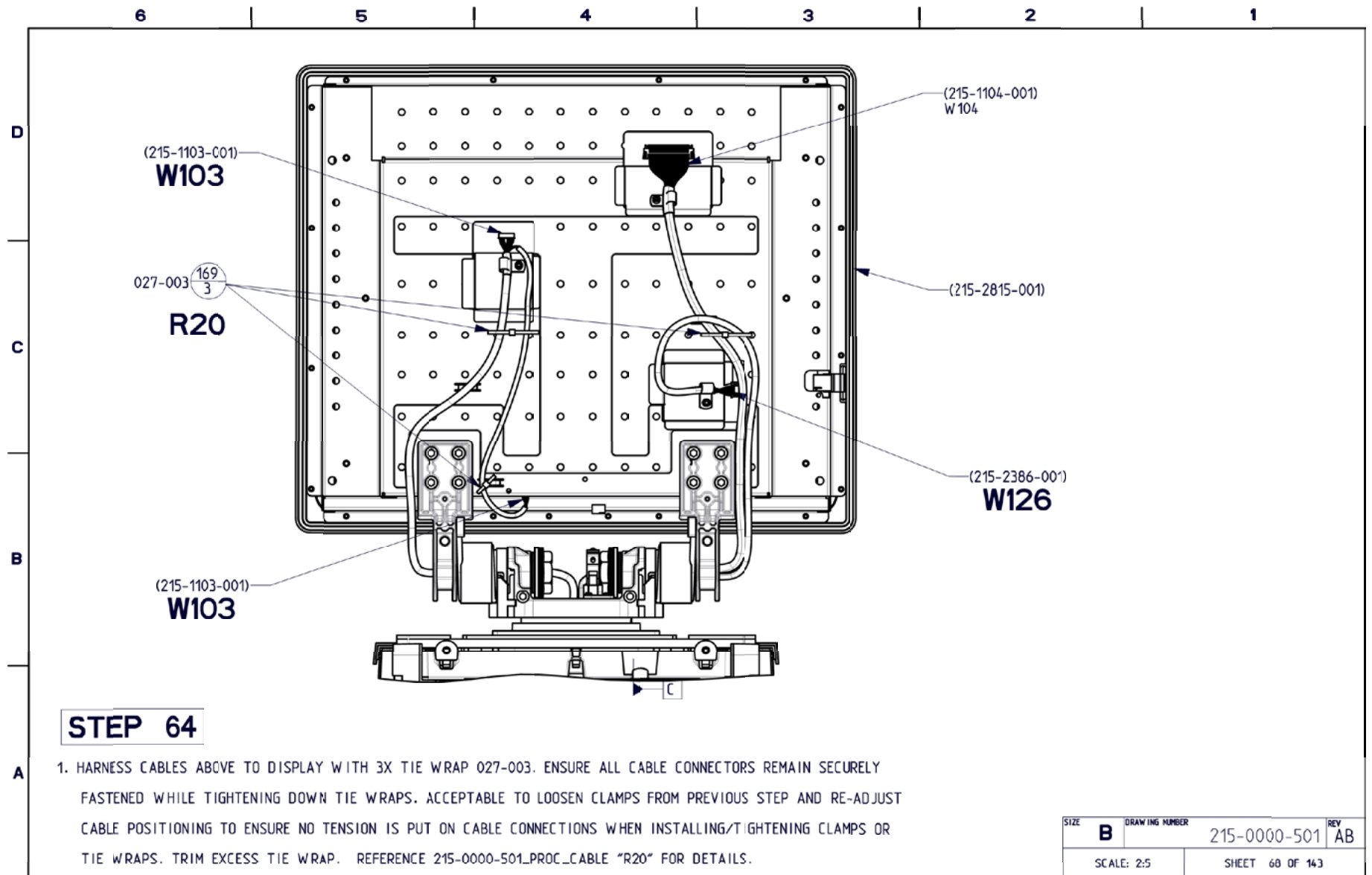


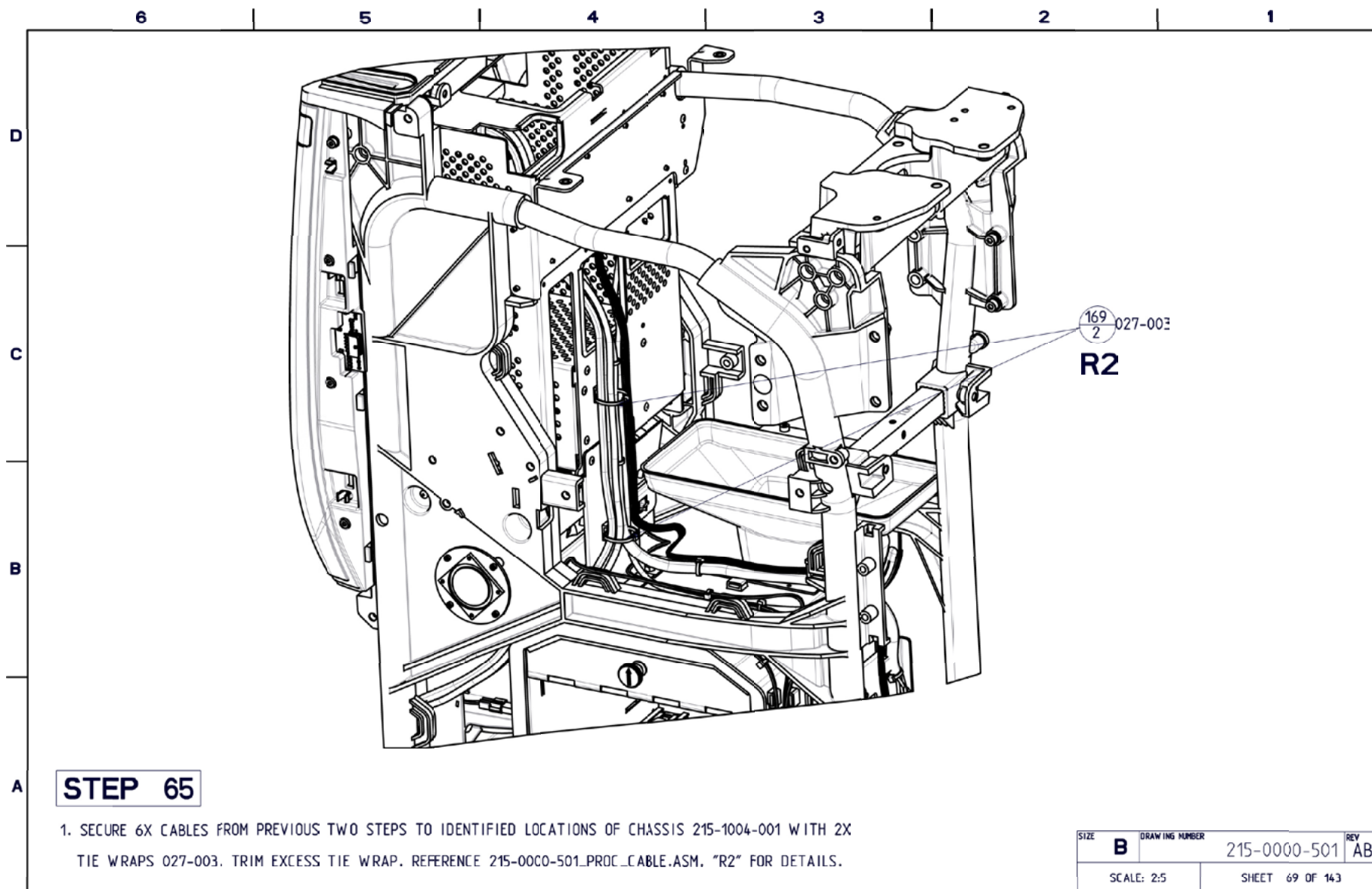
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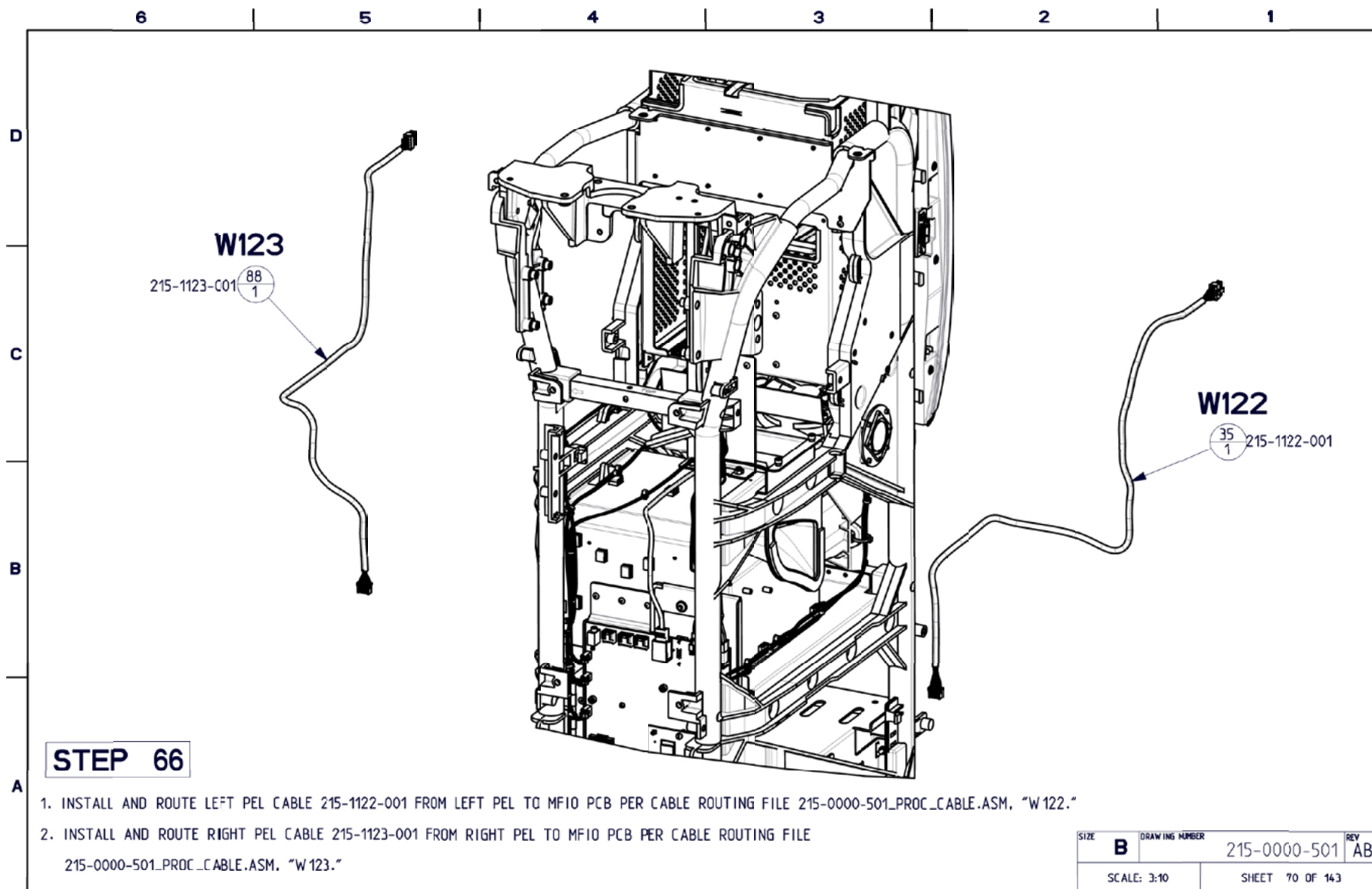
- 215-2815-001, REFERENCE FILE 215-0000-501_PROC_CABLE.ASM FOR DETAILS.

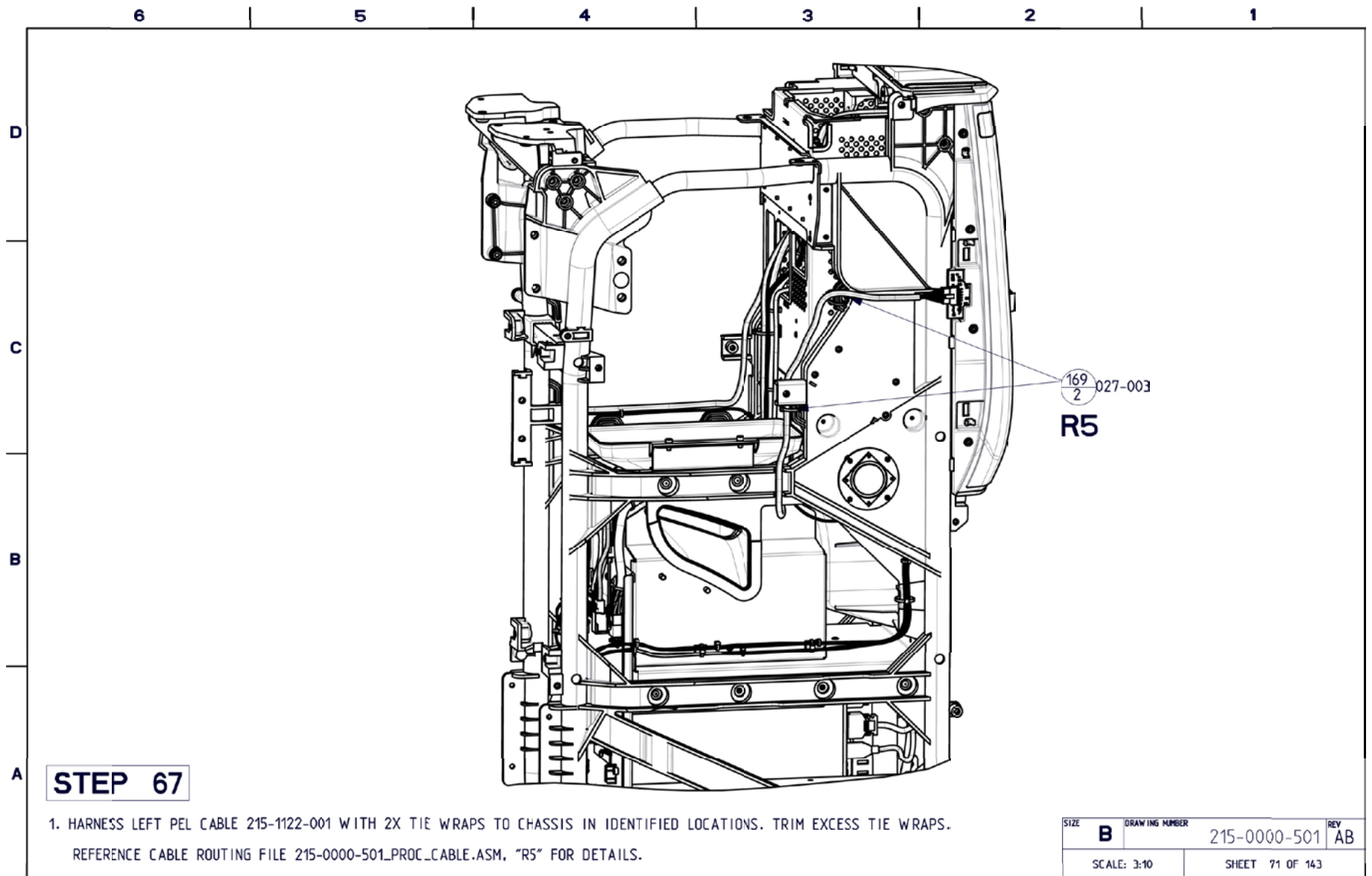
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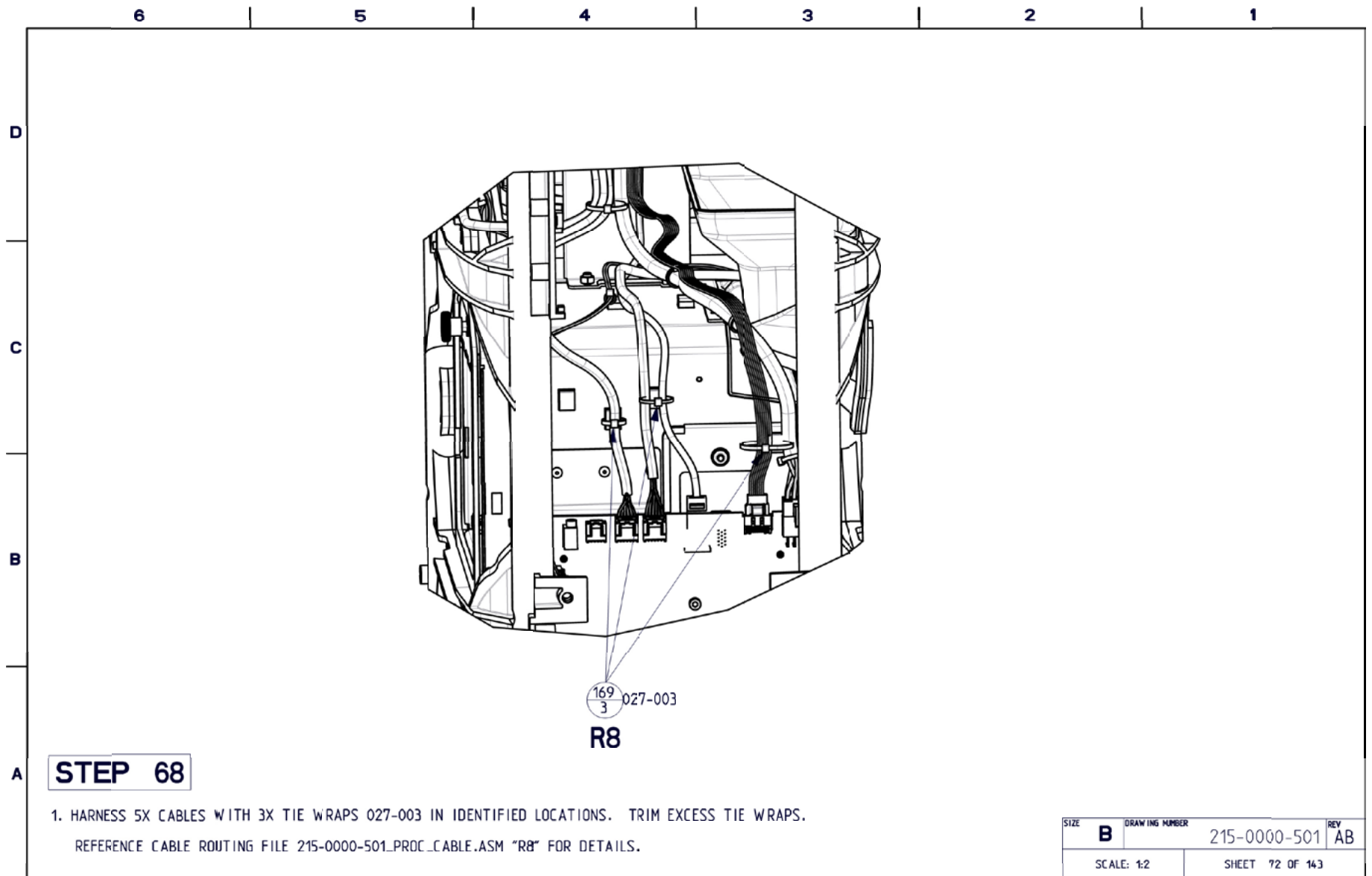


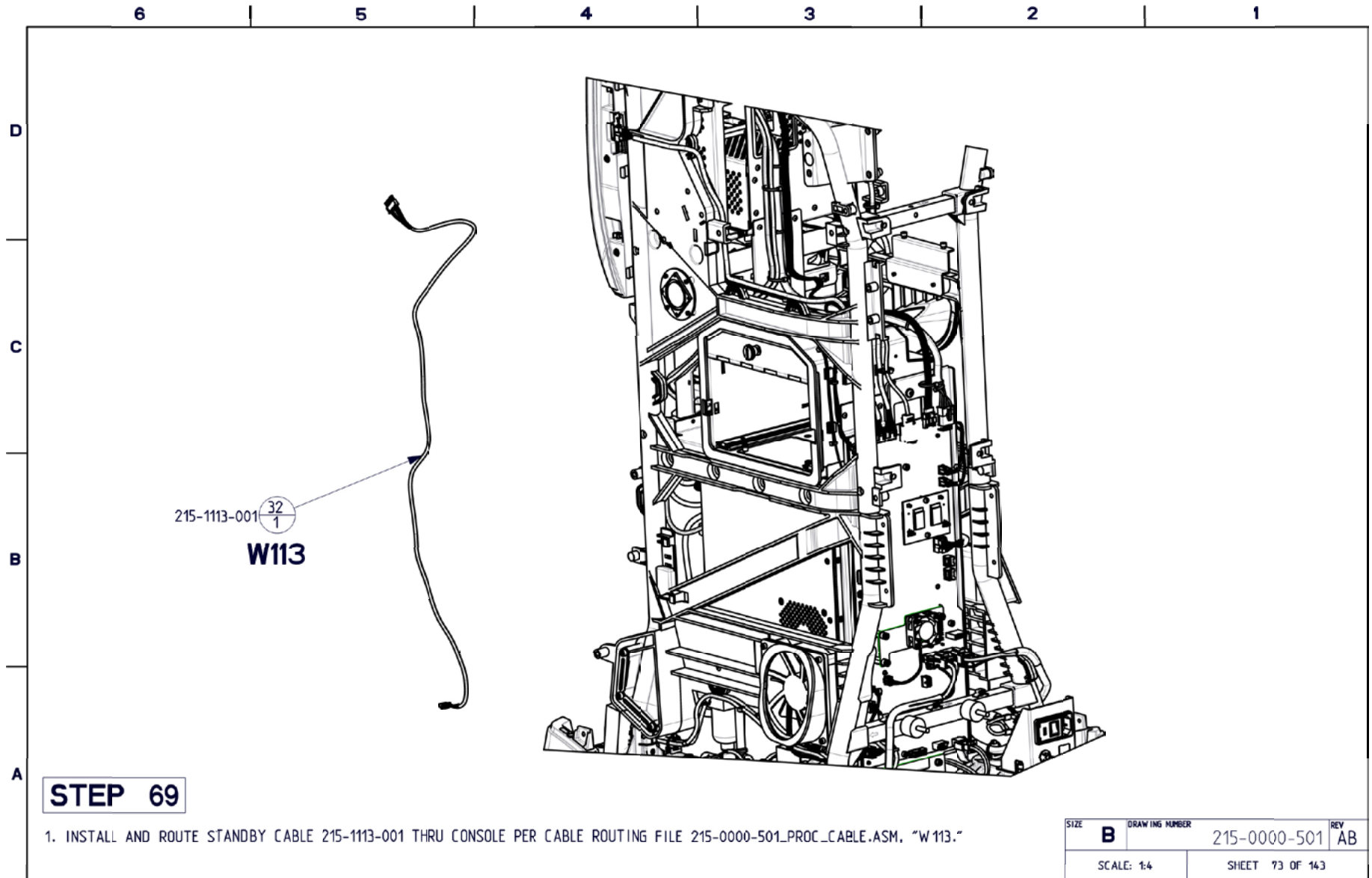


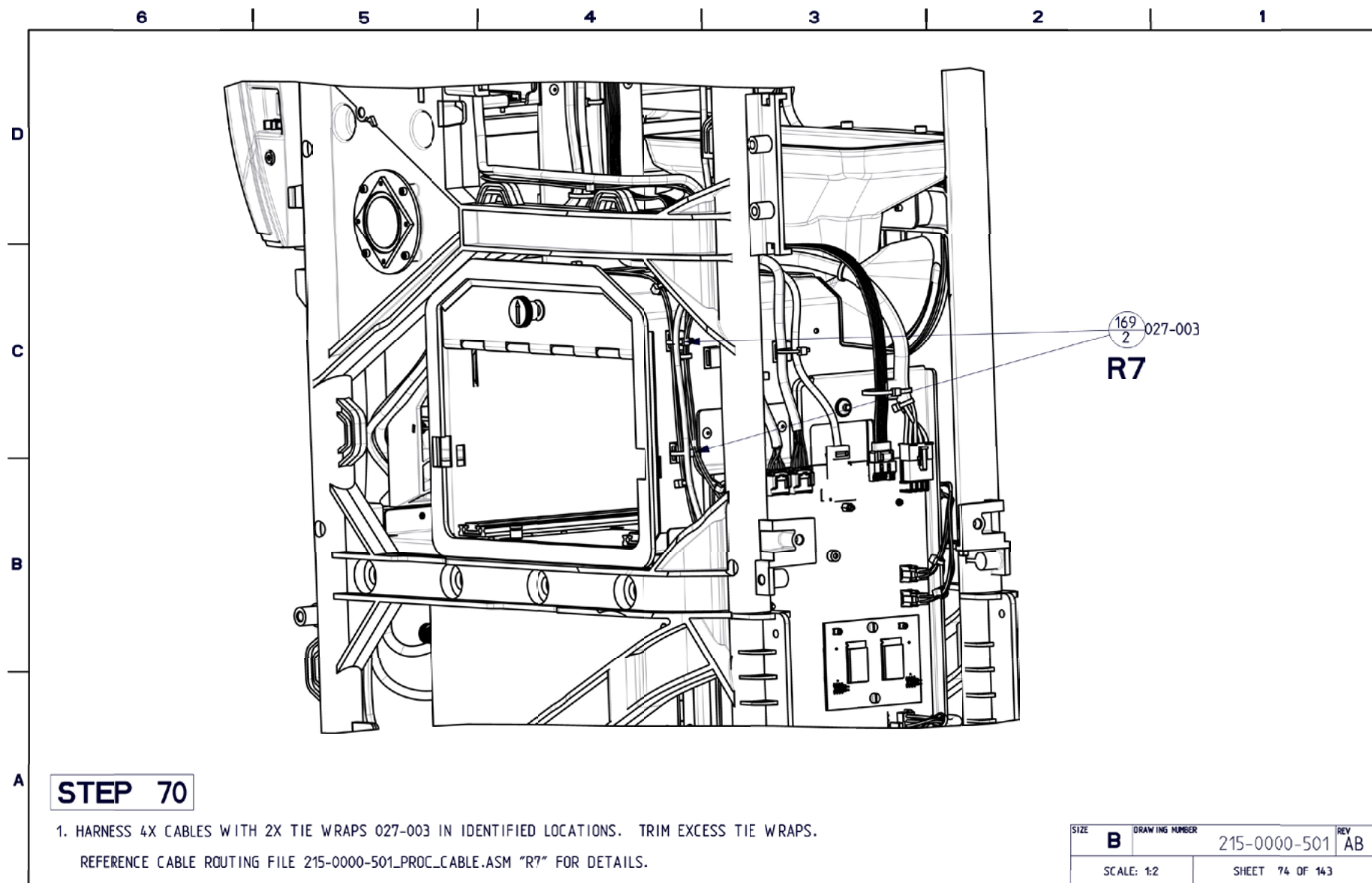


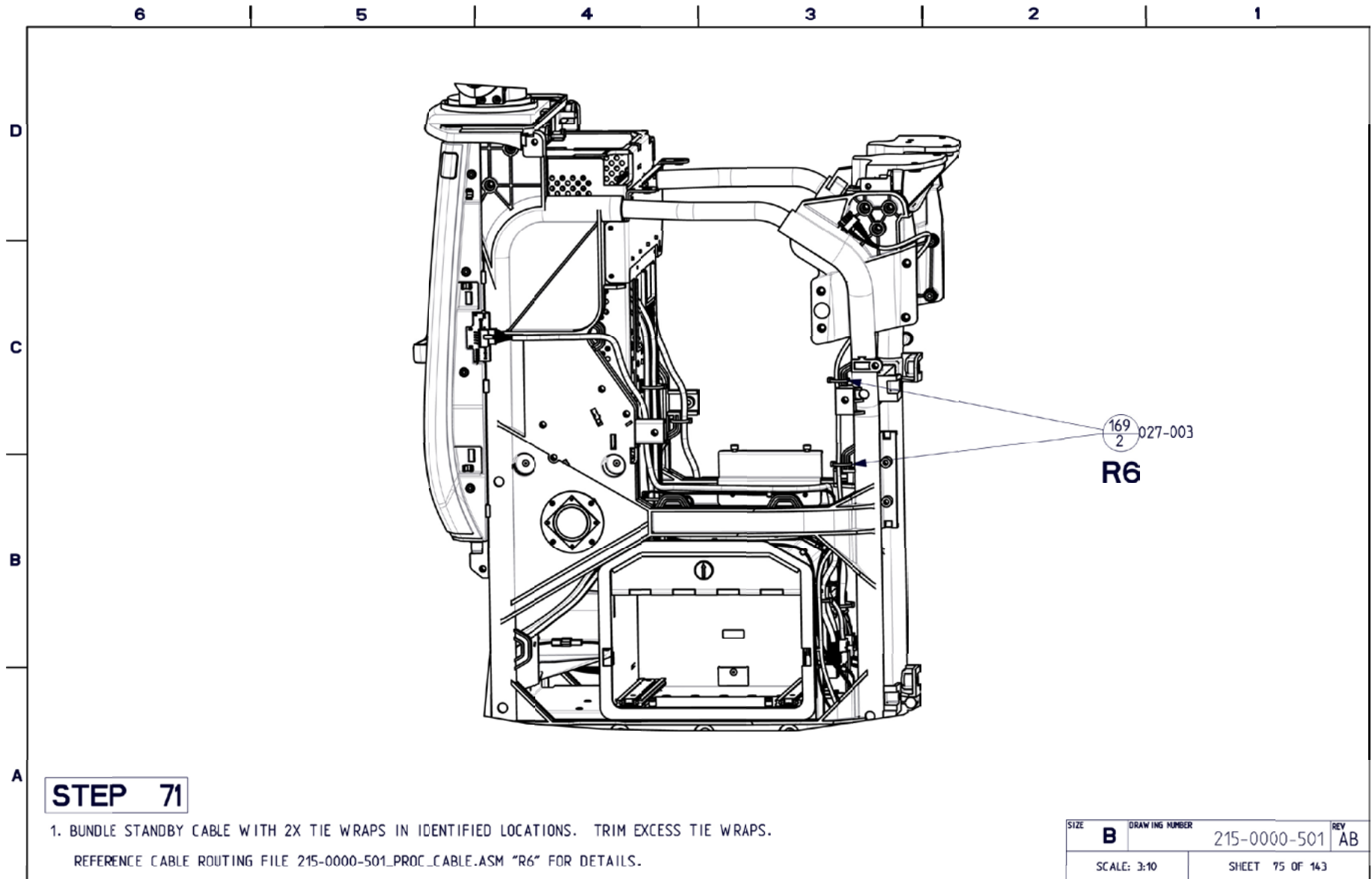


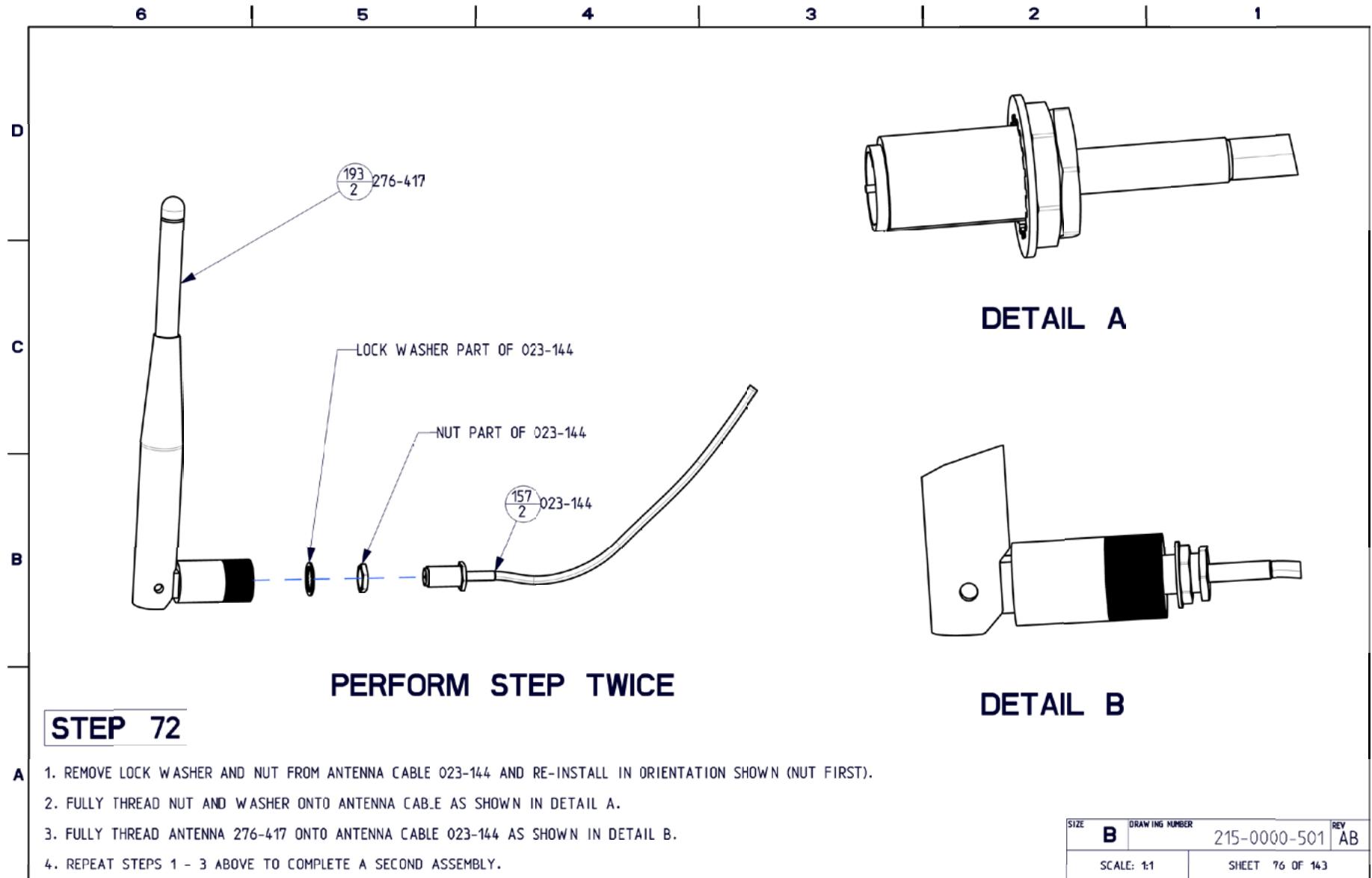


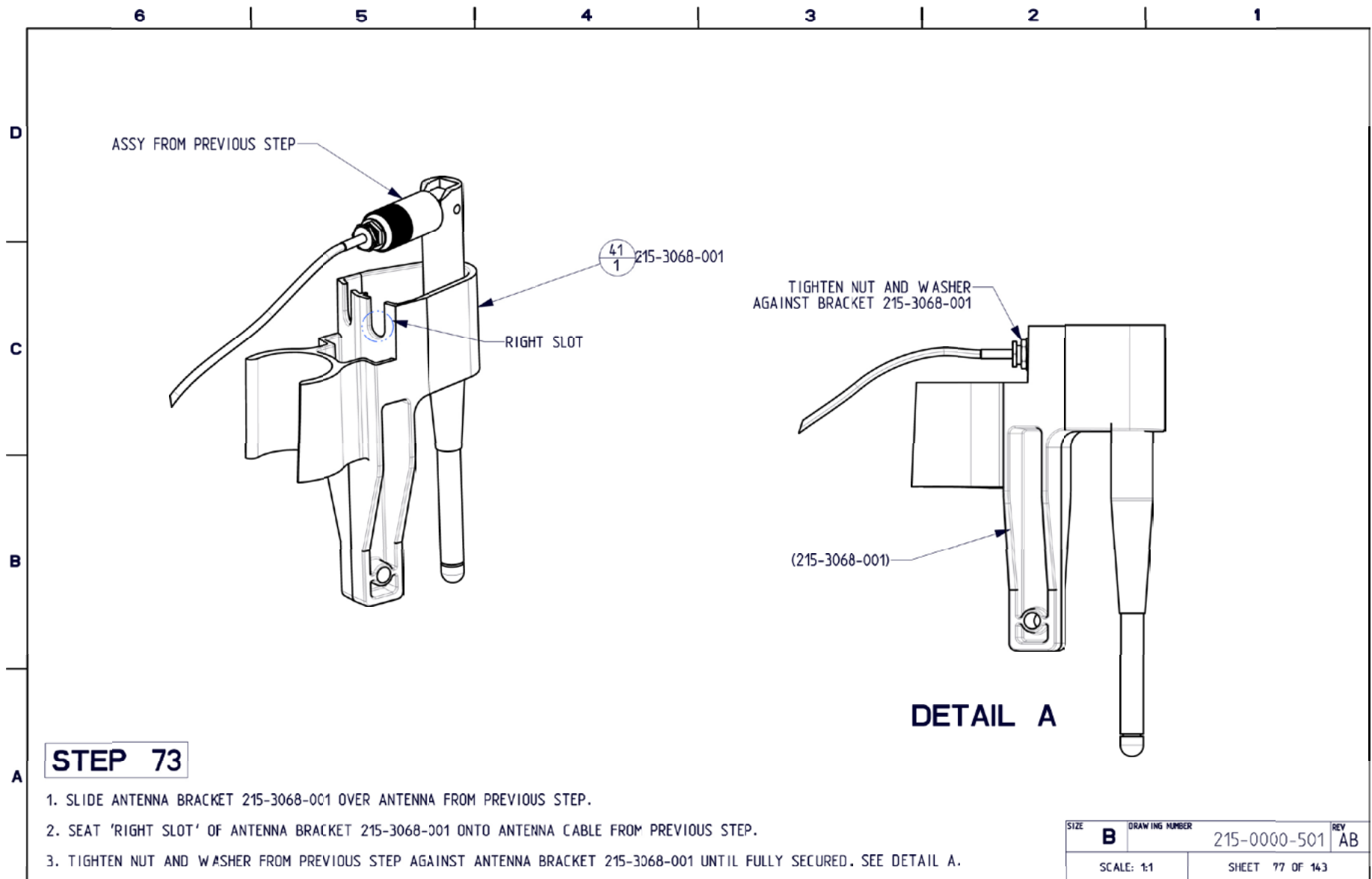


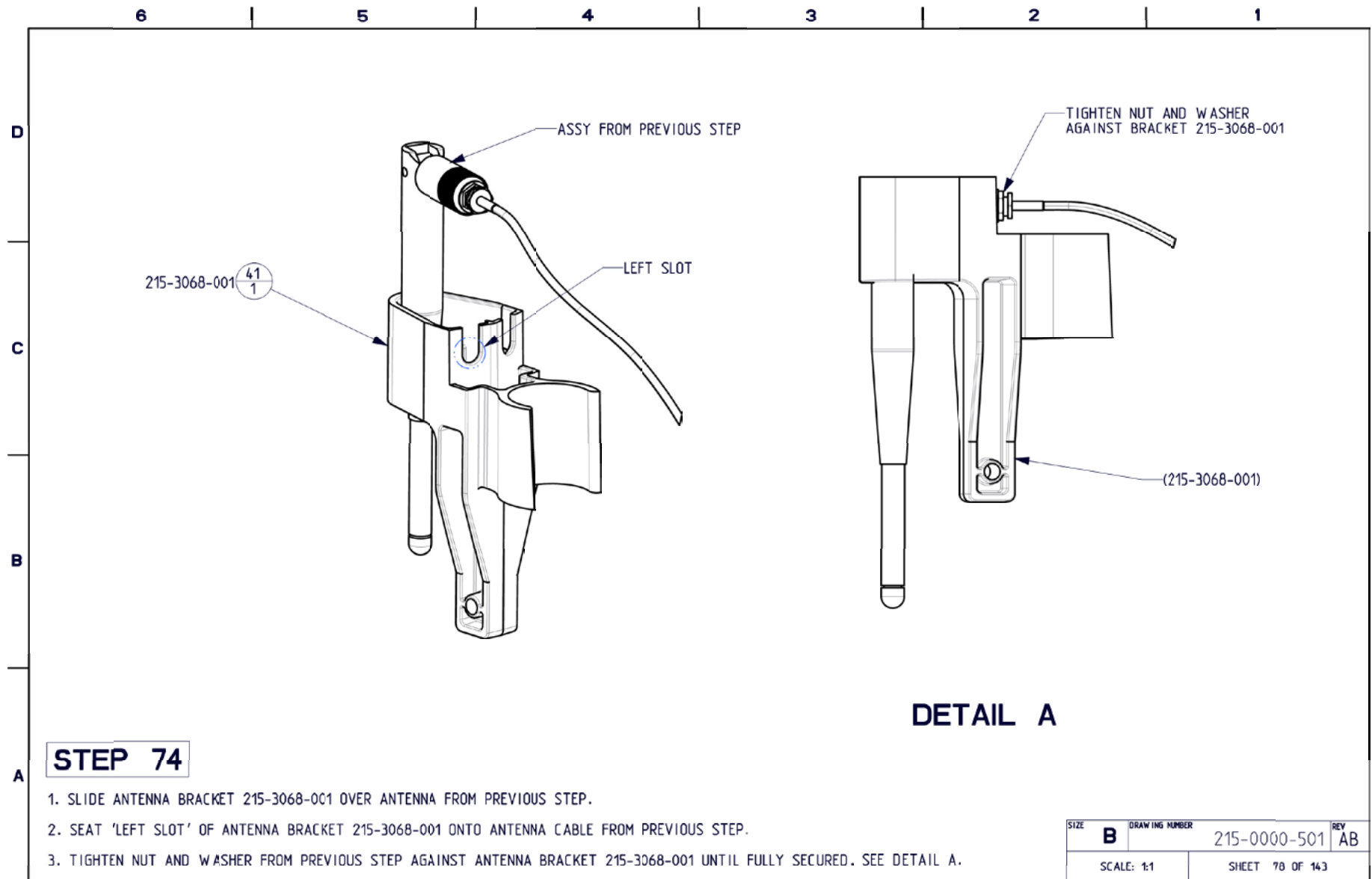


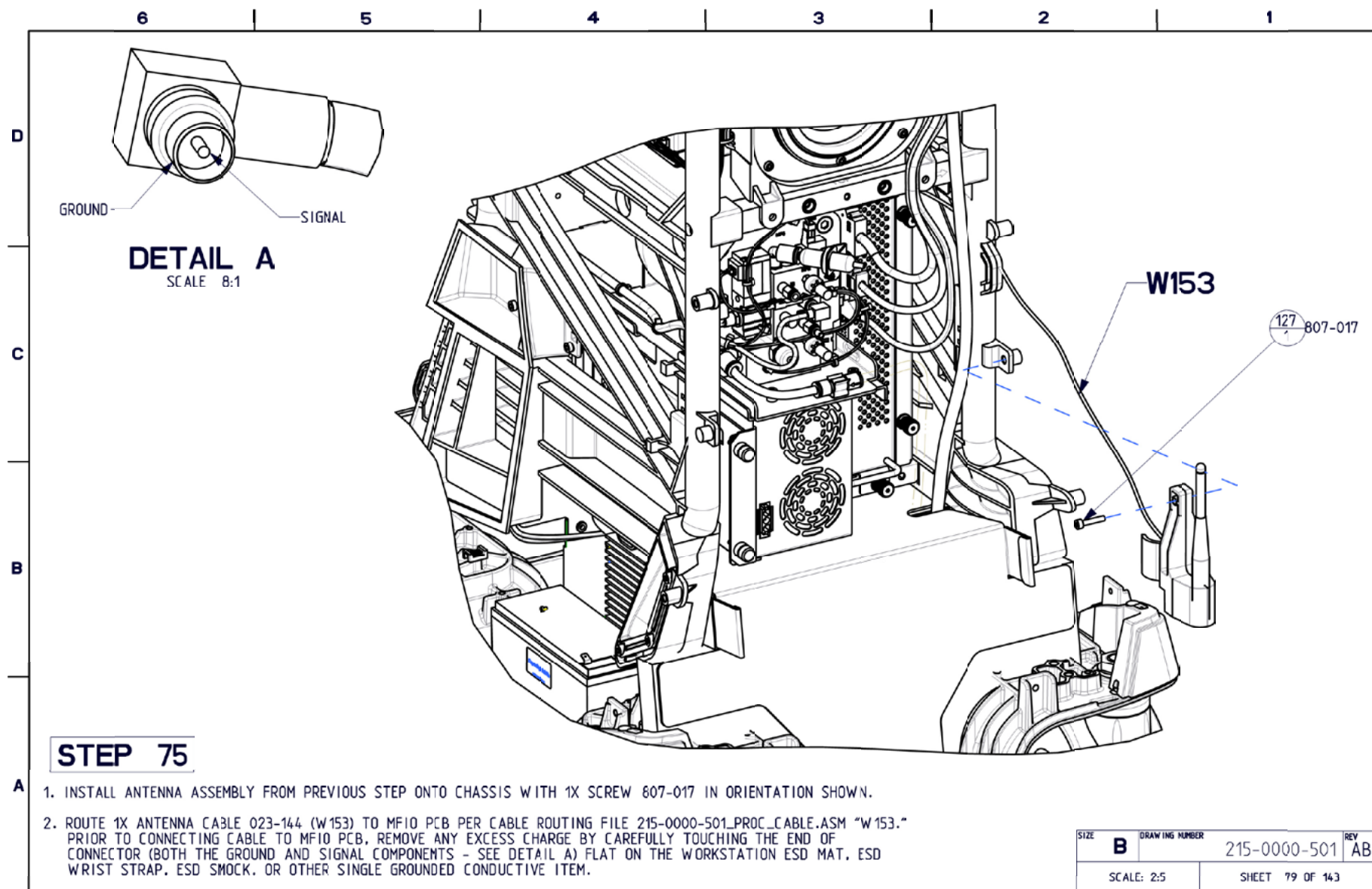


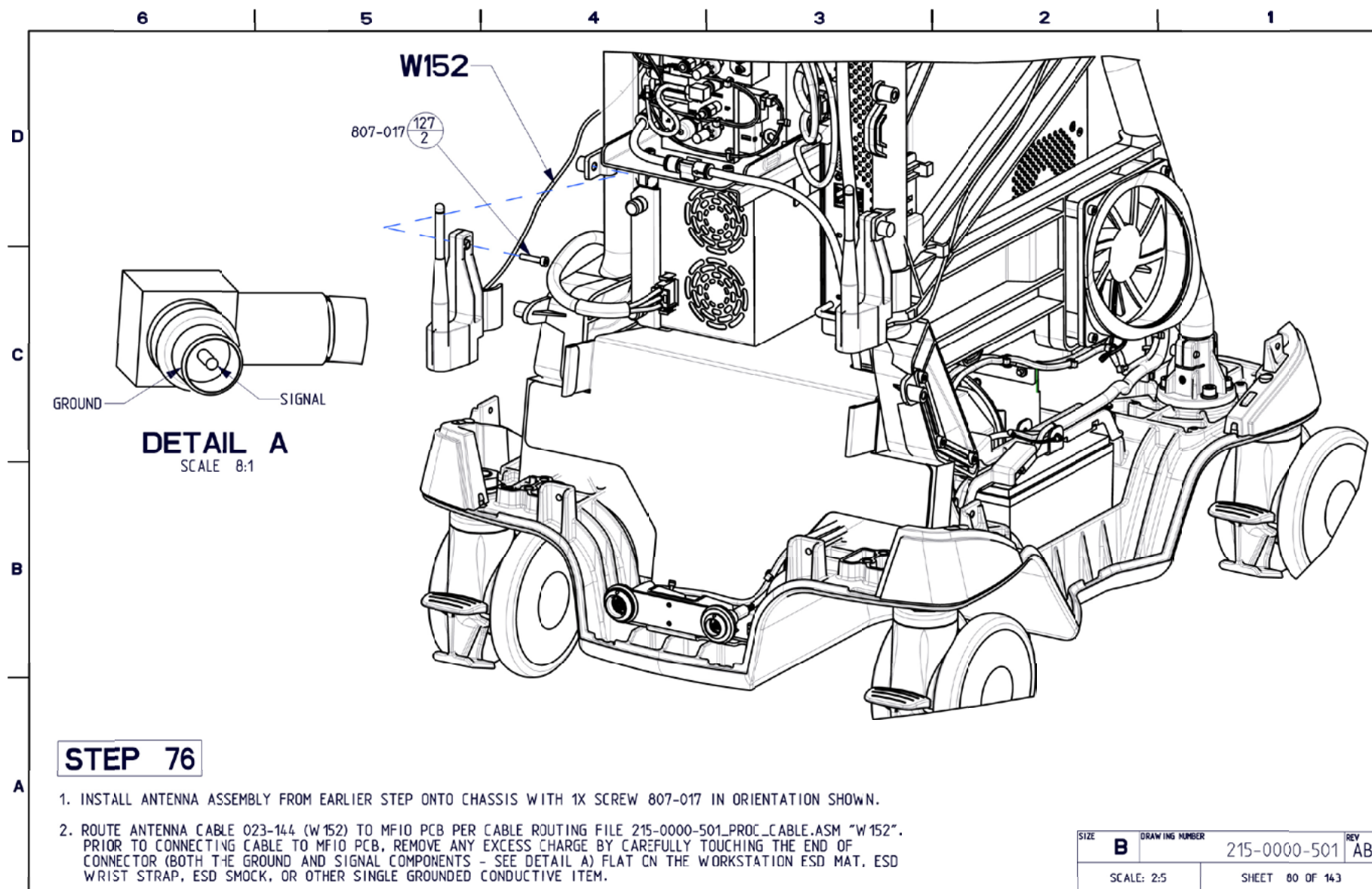








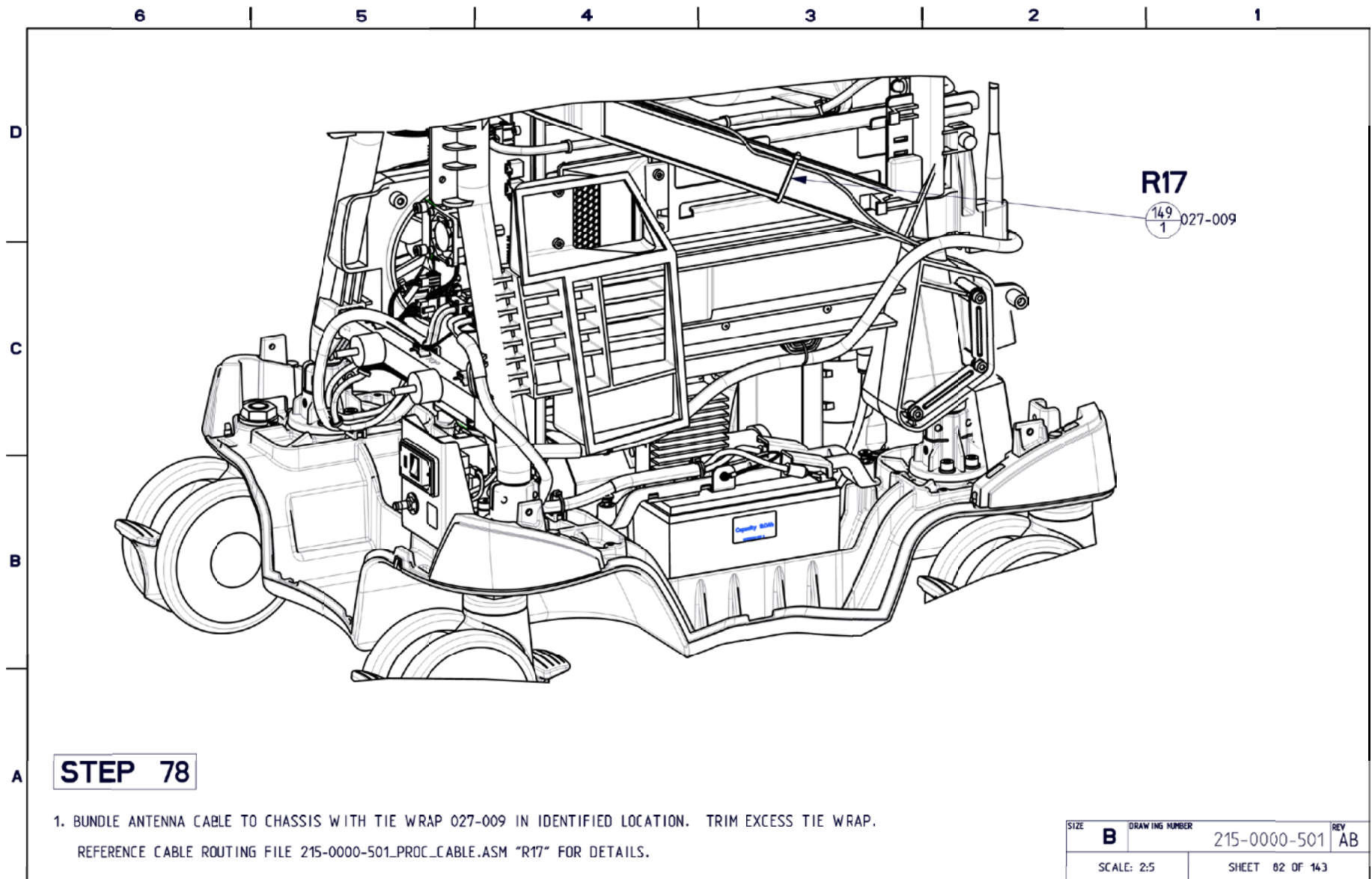


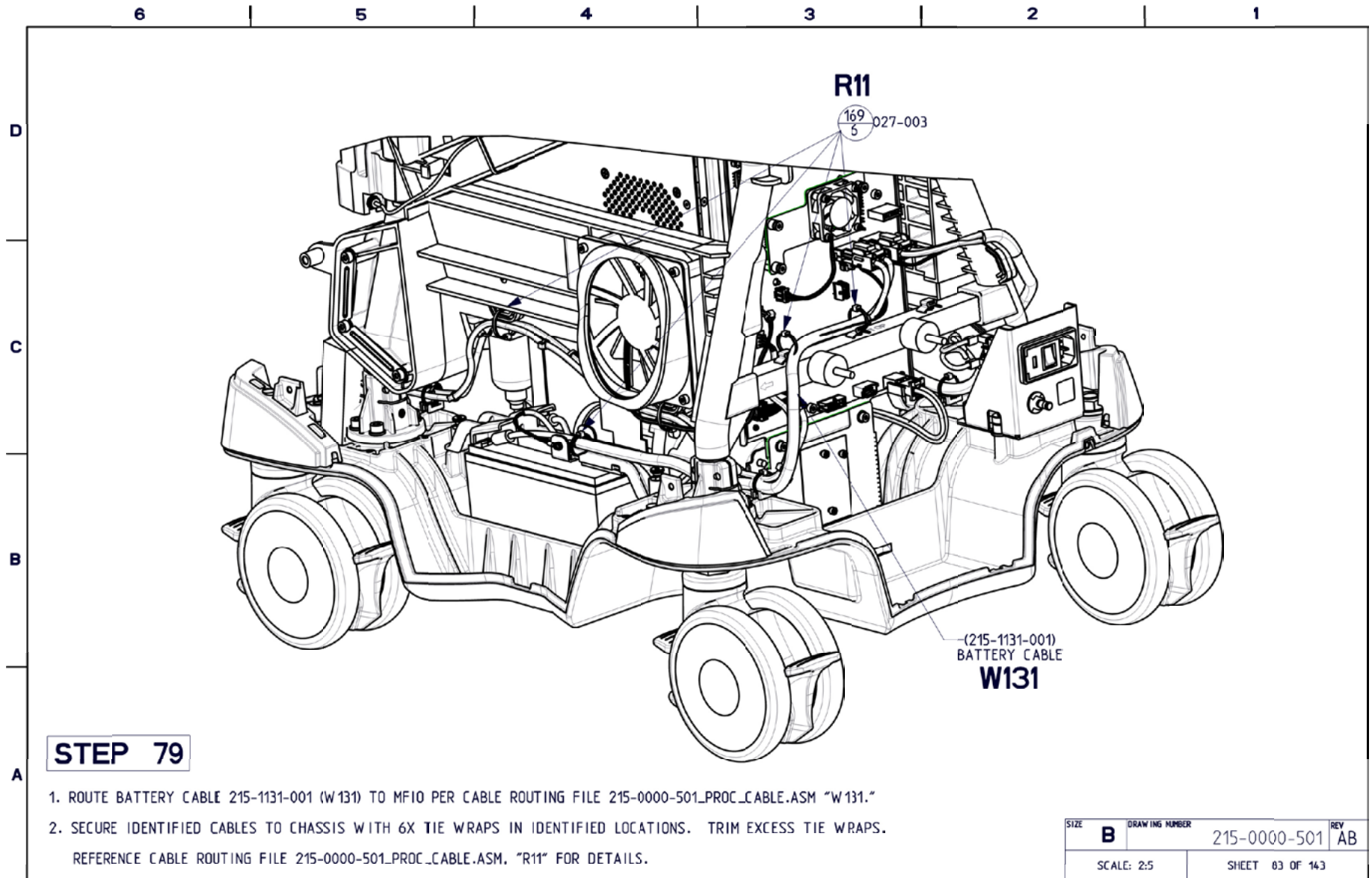


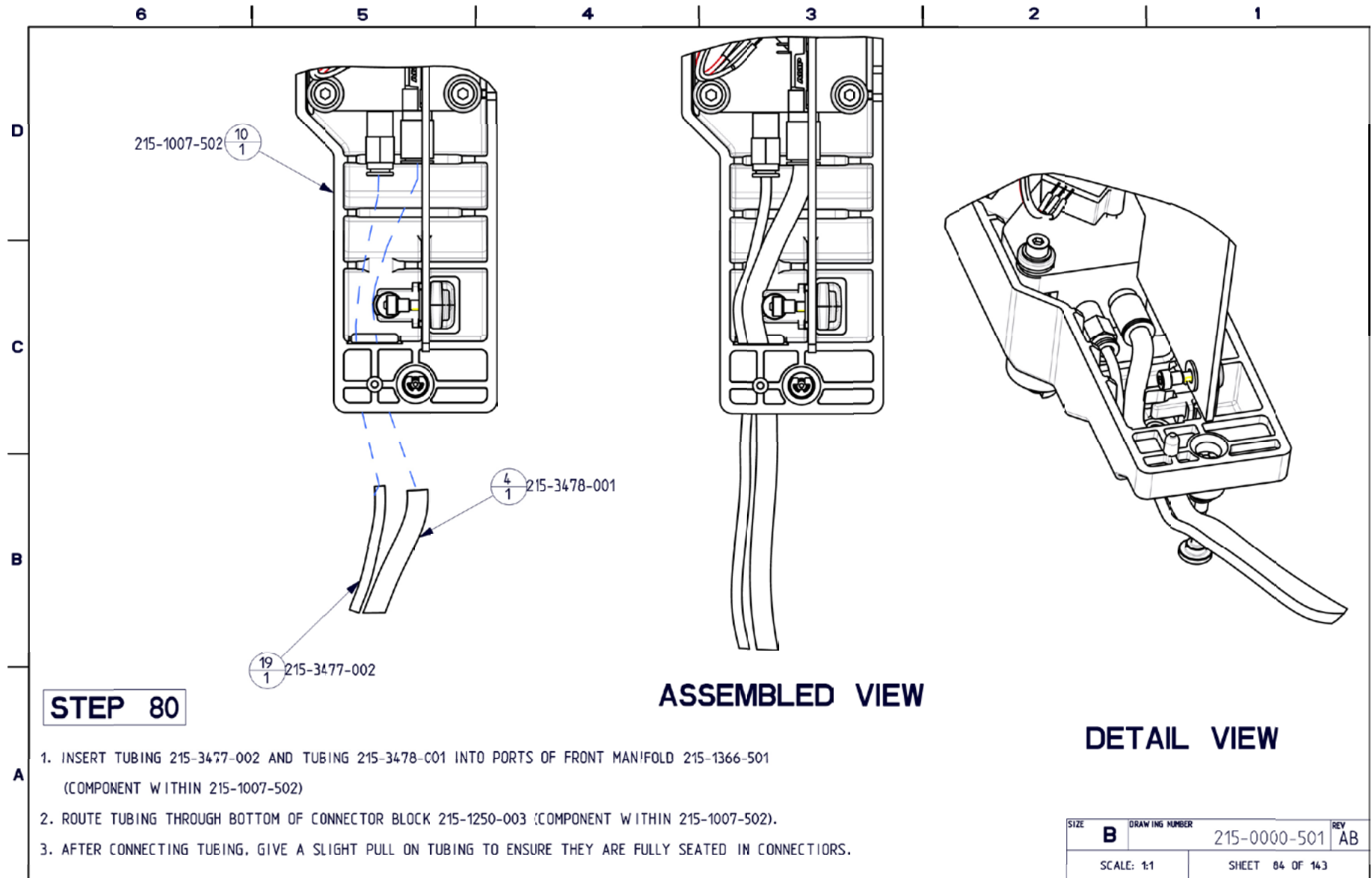


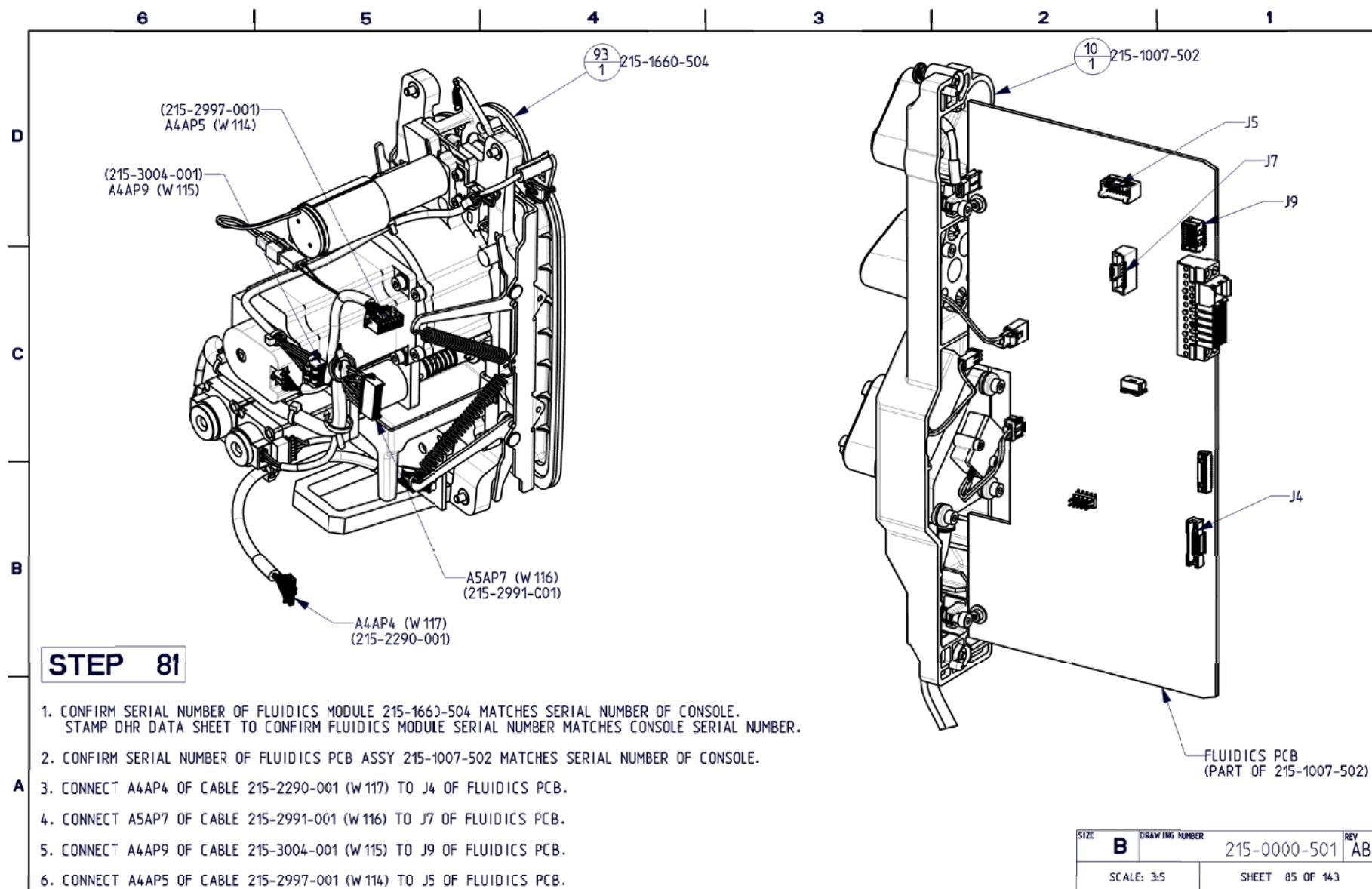
1. BUNDLE ANTENNA CABLE TO CHASSIS WITH TIE WRAP 027-009 IN IDENTIFIED LOCATION. TRIM EXCESS TIE WRAP. REFERENCE CABLE ROUTING FILE 215-0000-501_PROC_CABLE.ASM. "R15" FOR DETAILS.

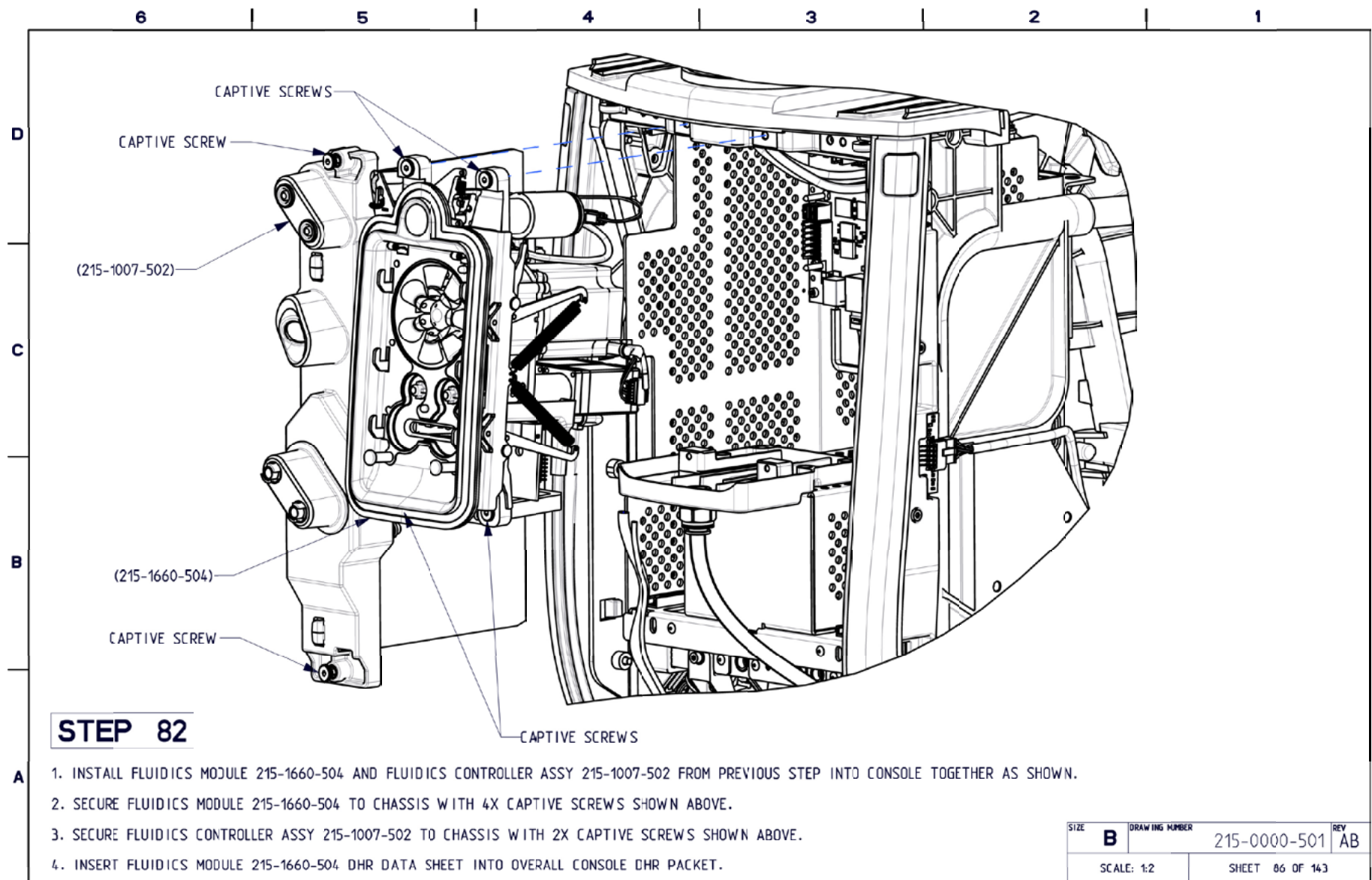
SIZE B	DRAWING NUMBER 215-0000-501	REV AB
SCALE: 2:5		SHEET 01 OF 143

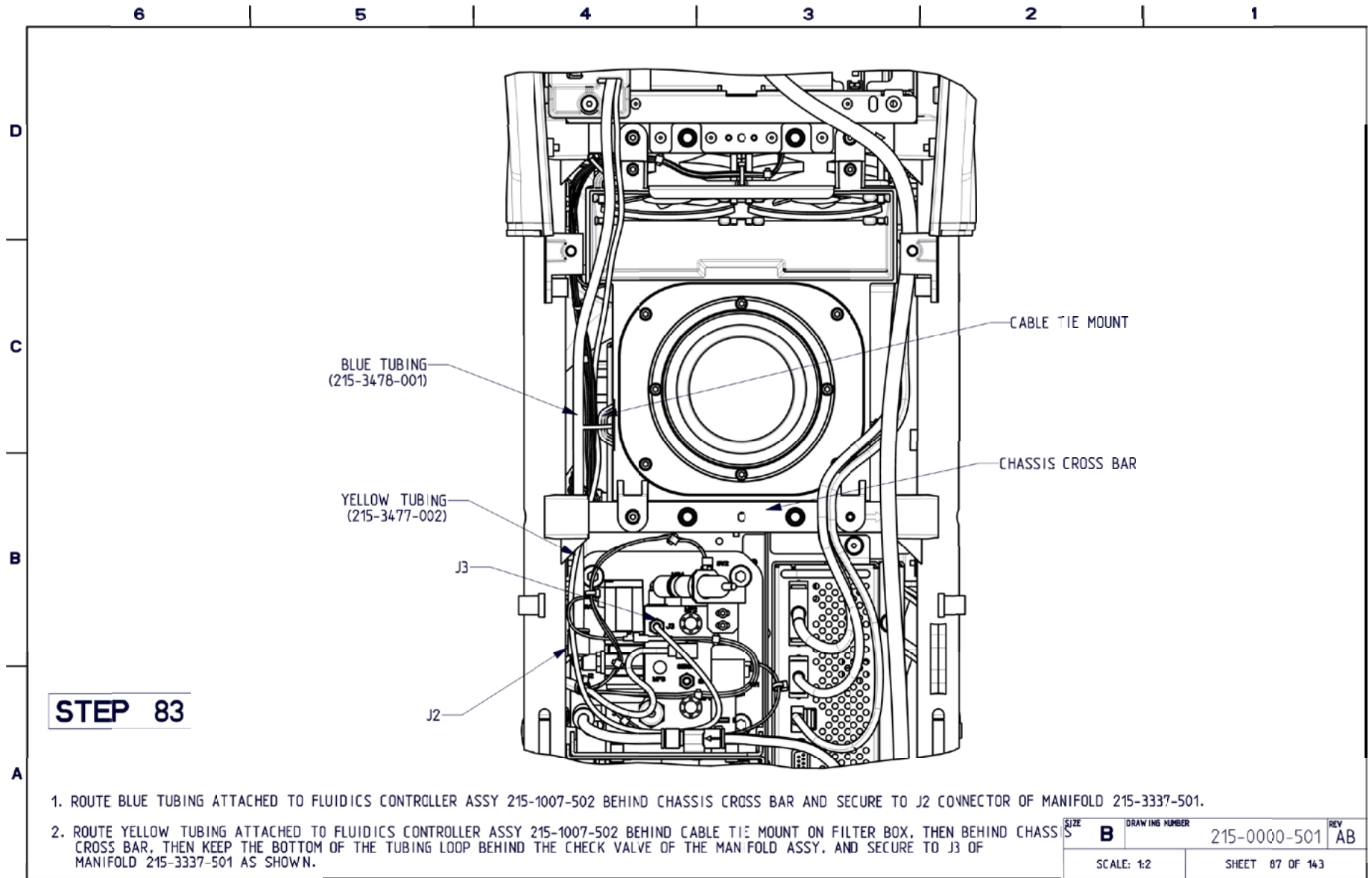


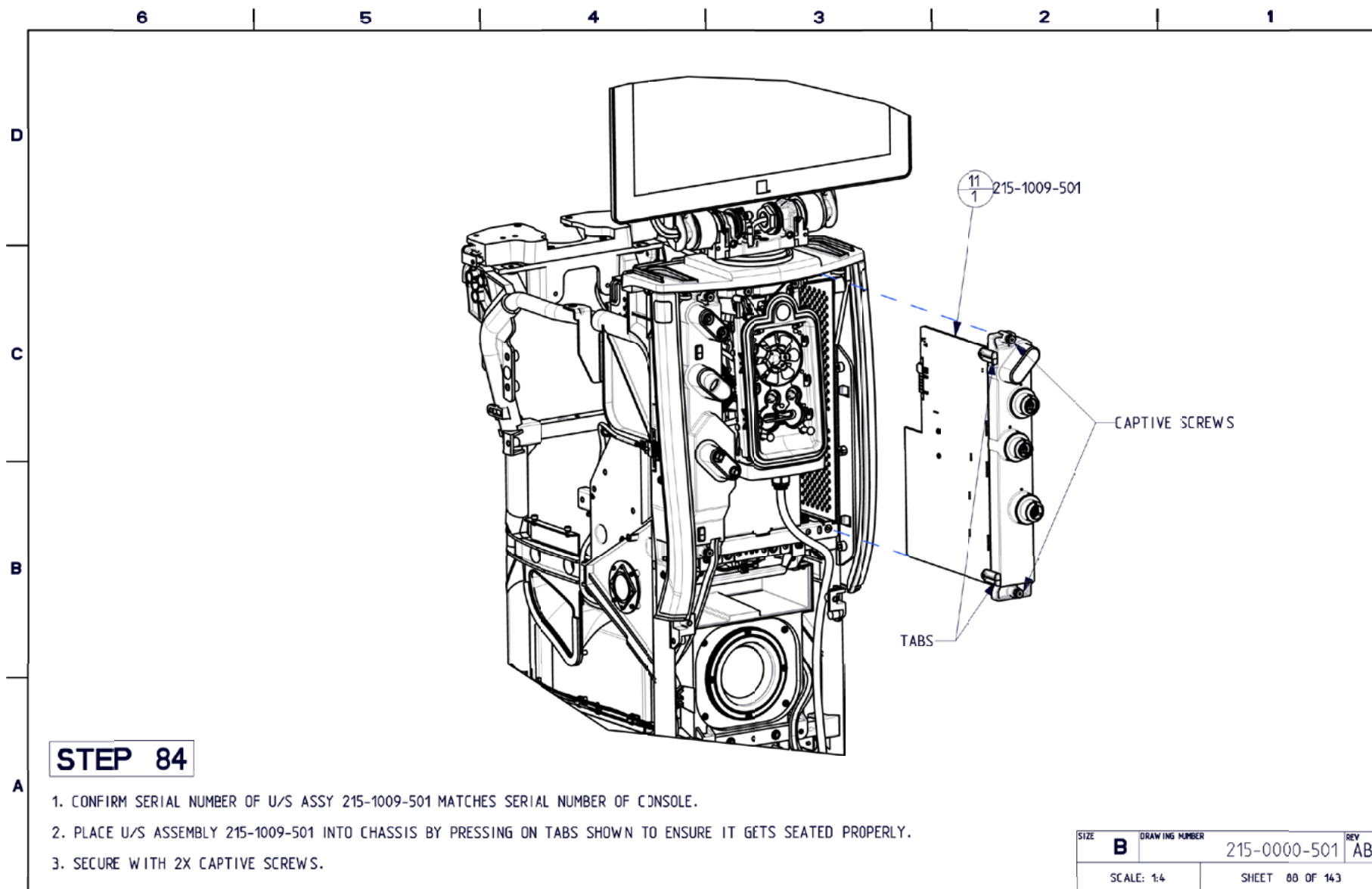


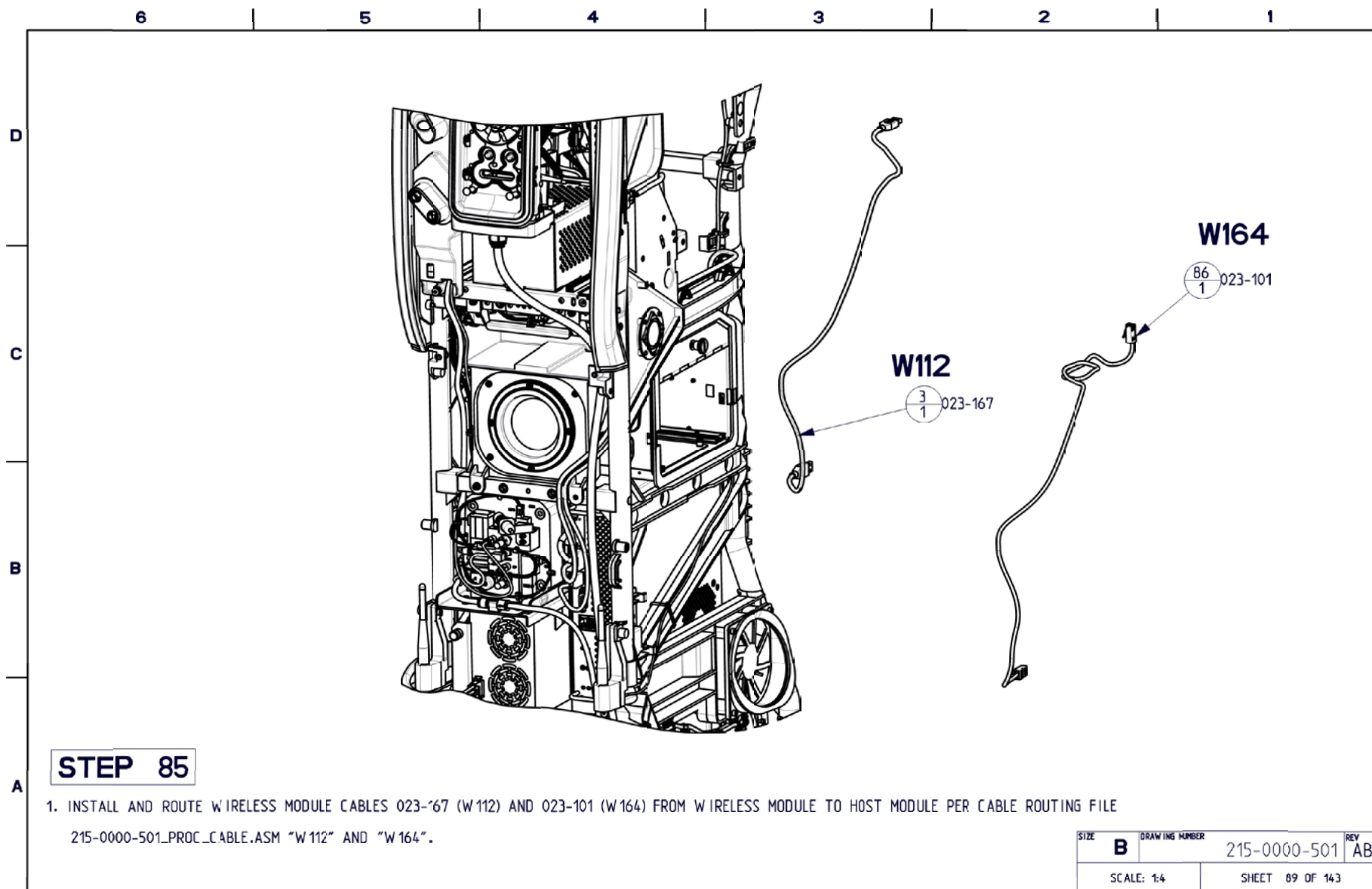


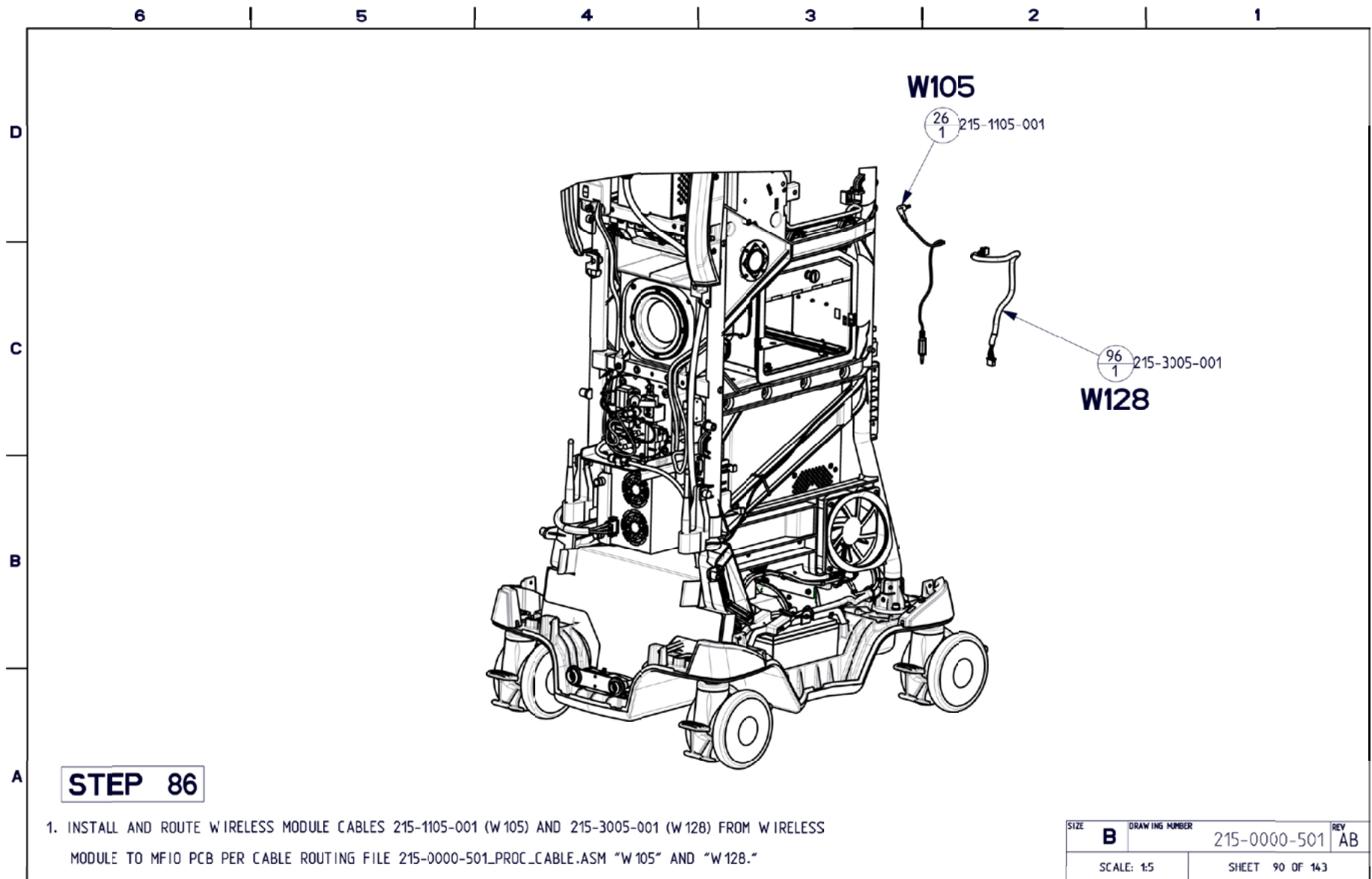


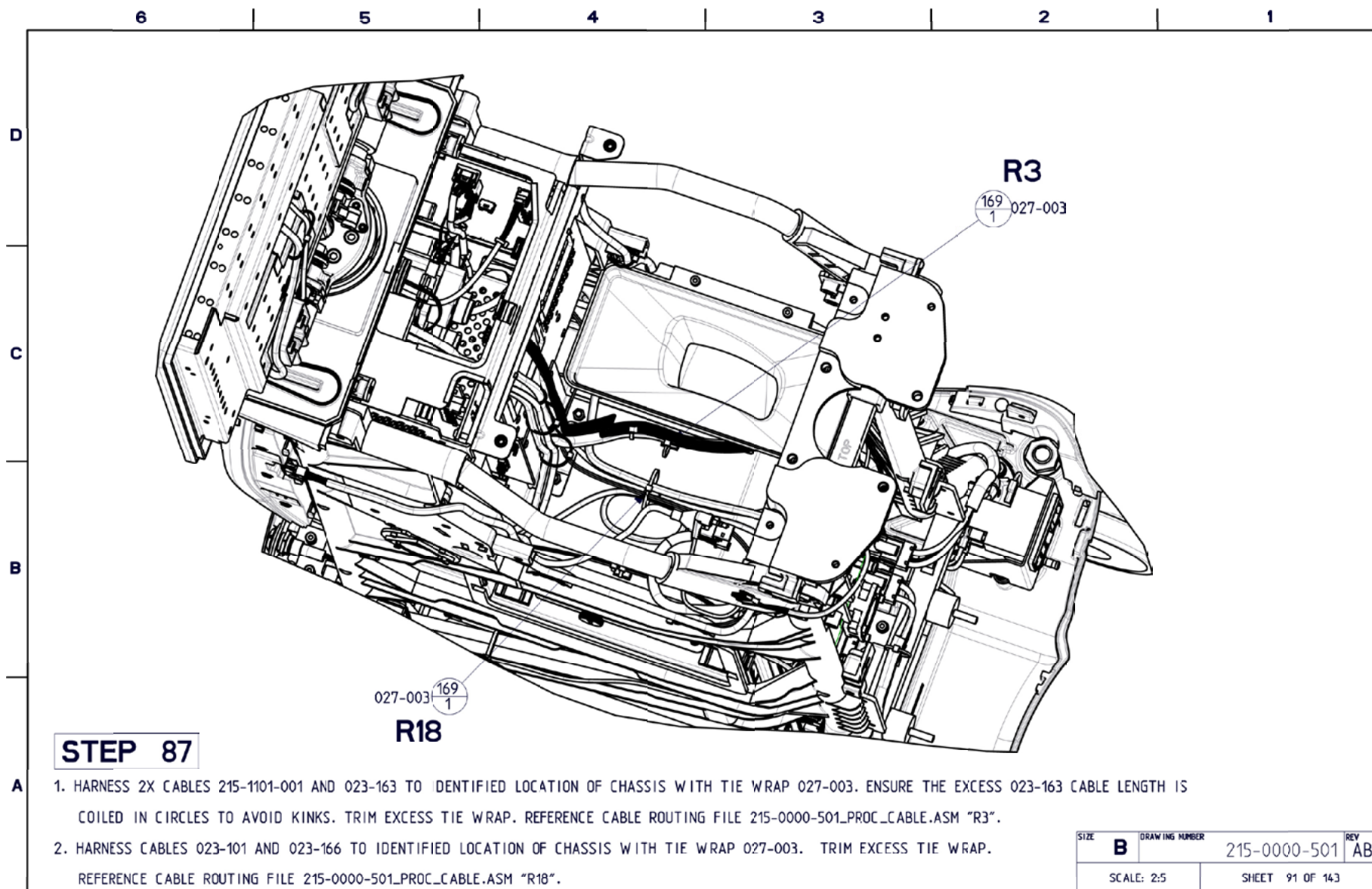


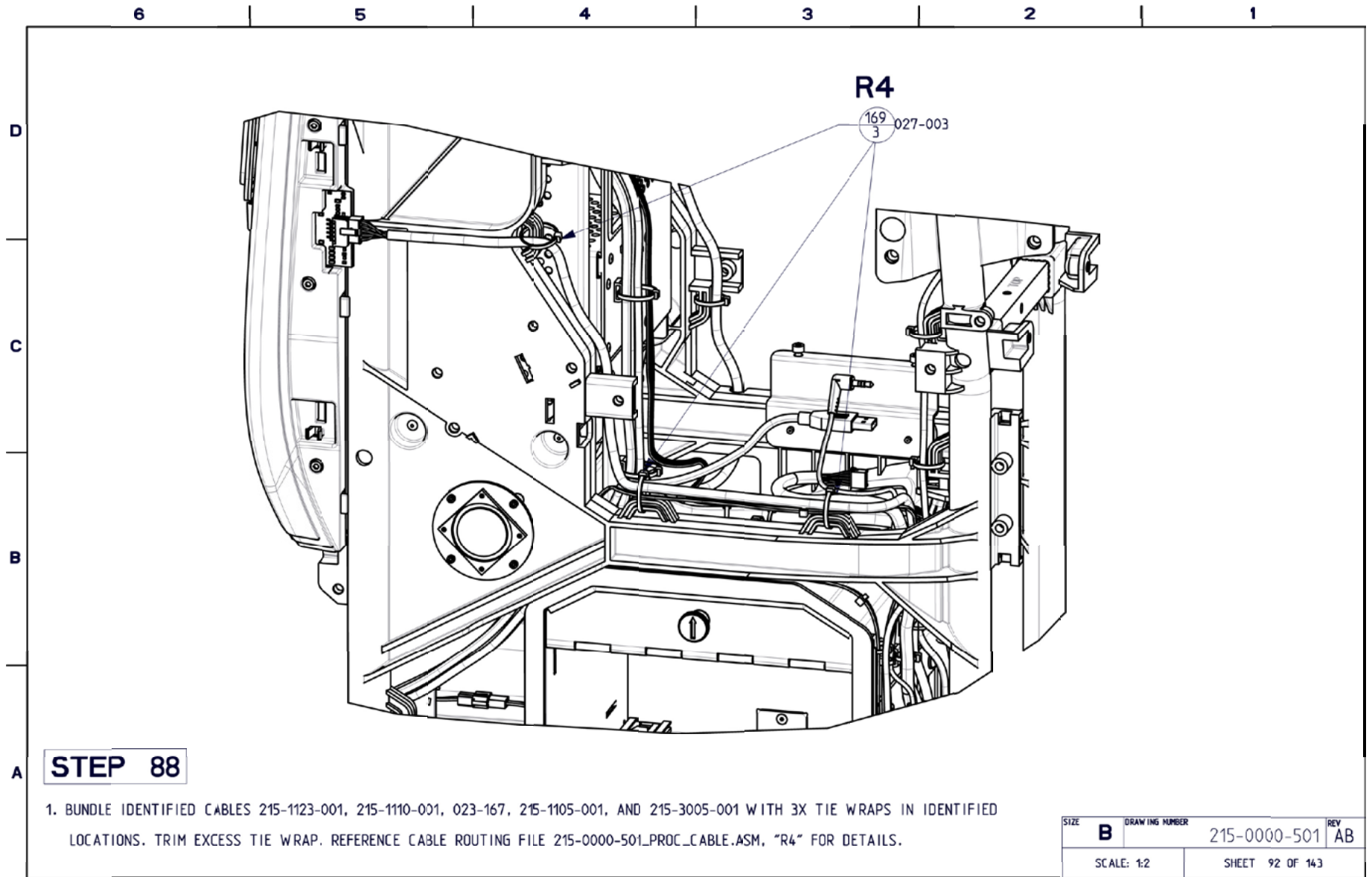


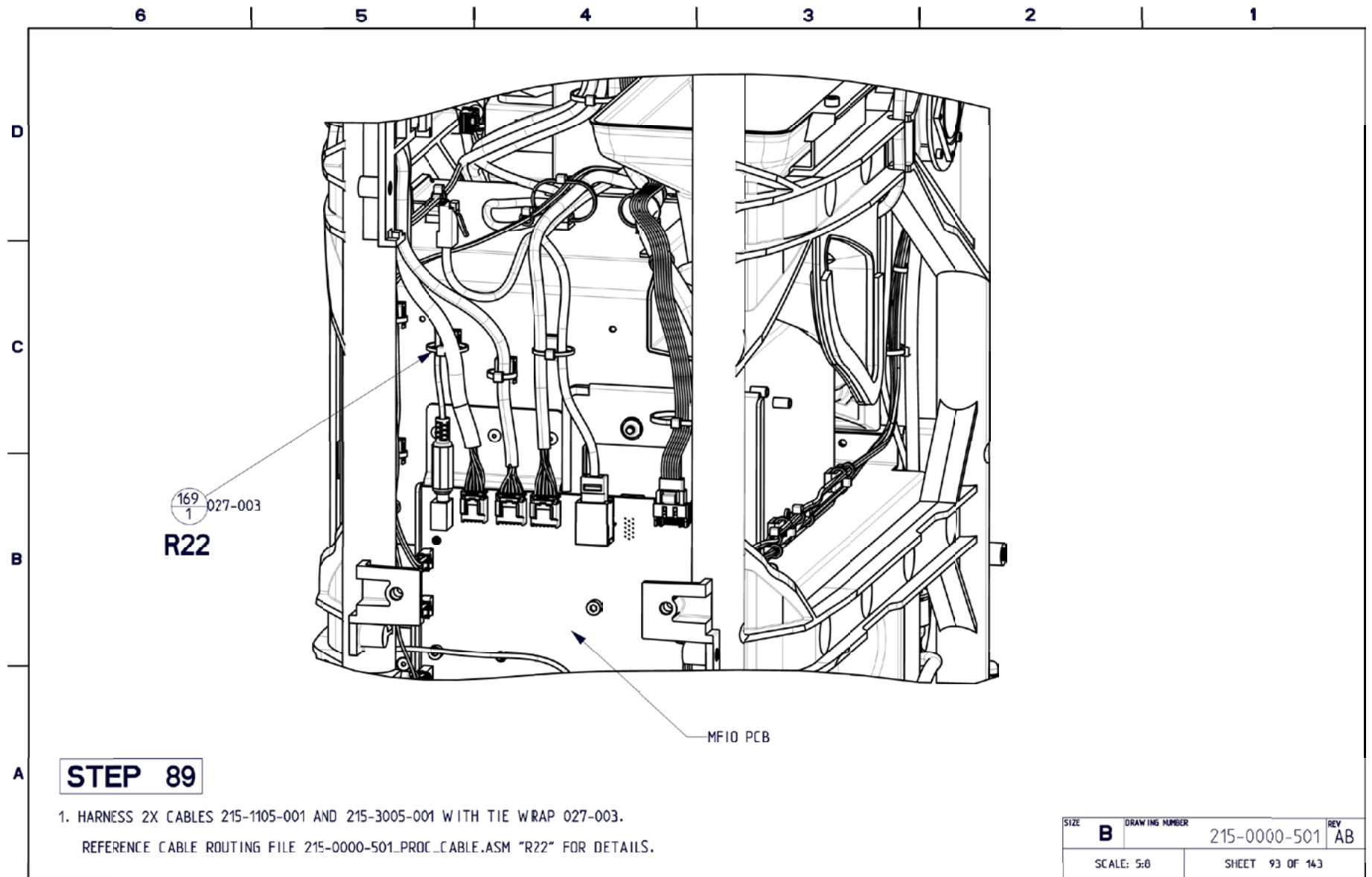




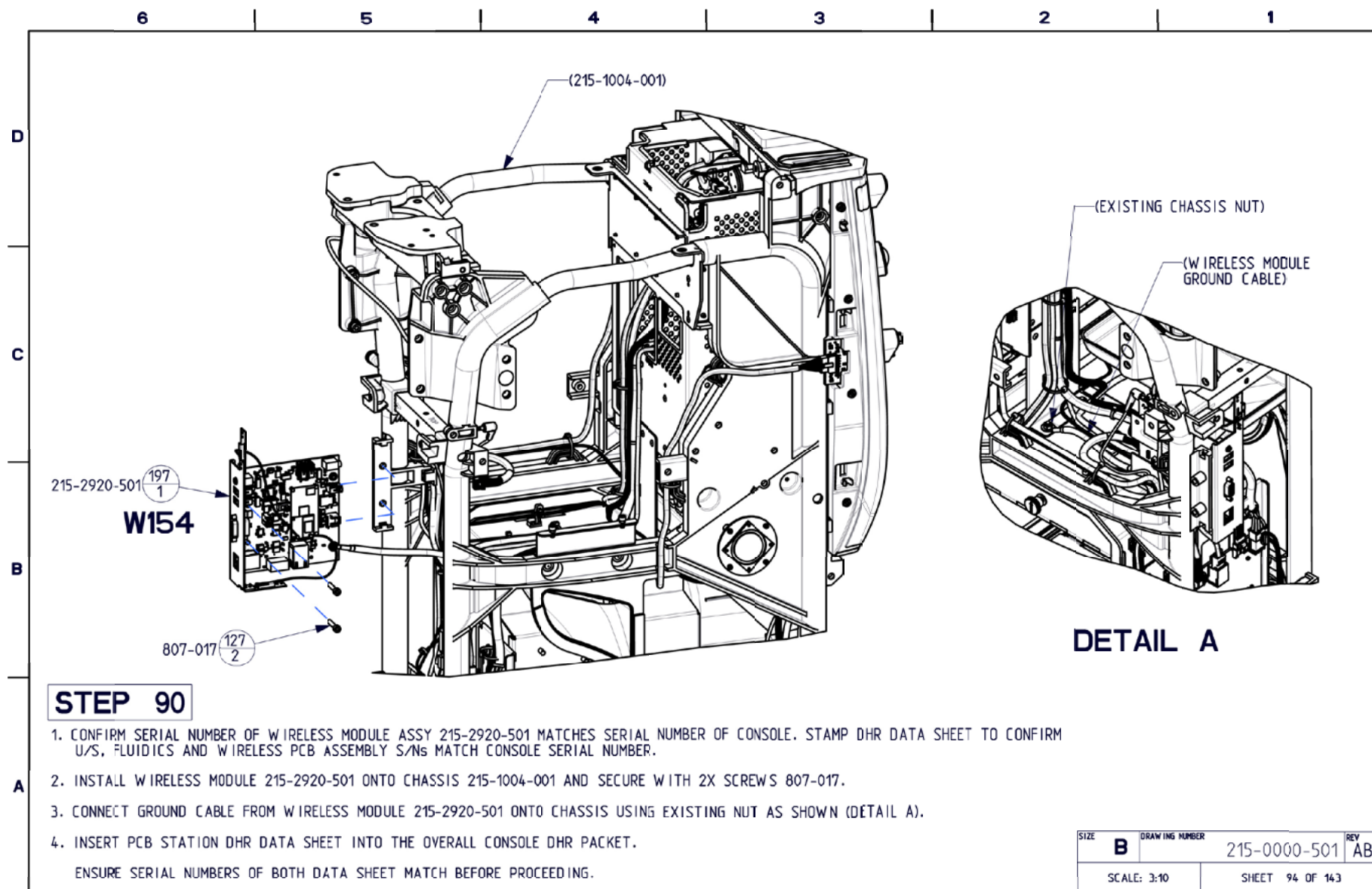


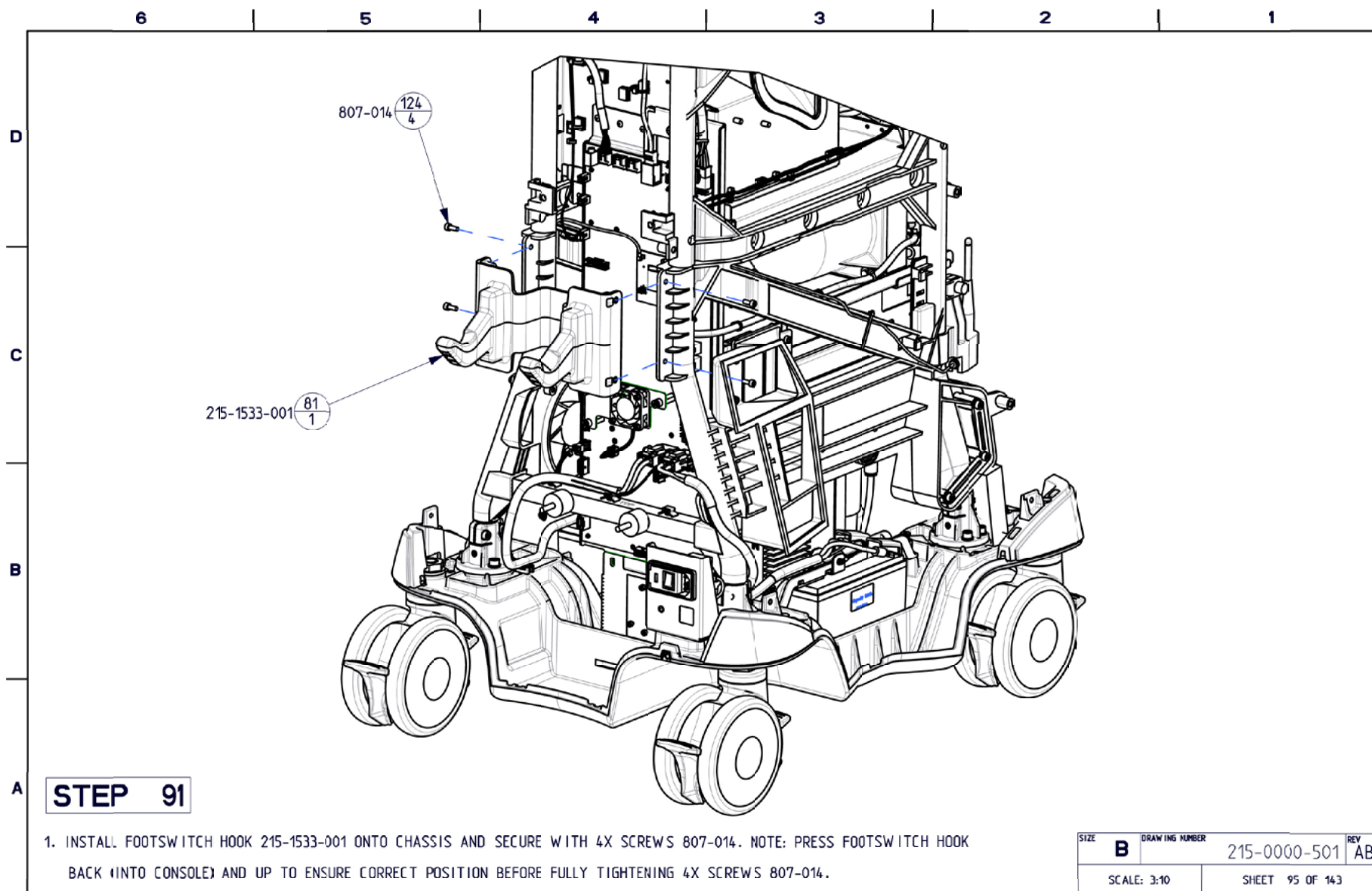






SIZE	DRAWING NUMBER	REV
B	215-0000-501	AB
SCALE: 5:0		SHEET 93 OF 143



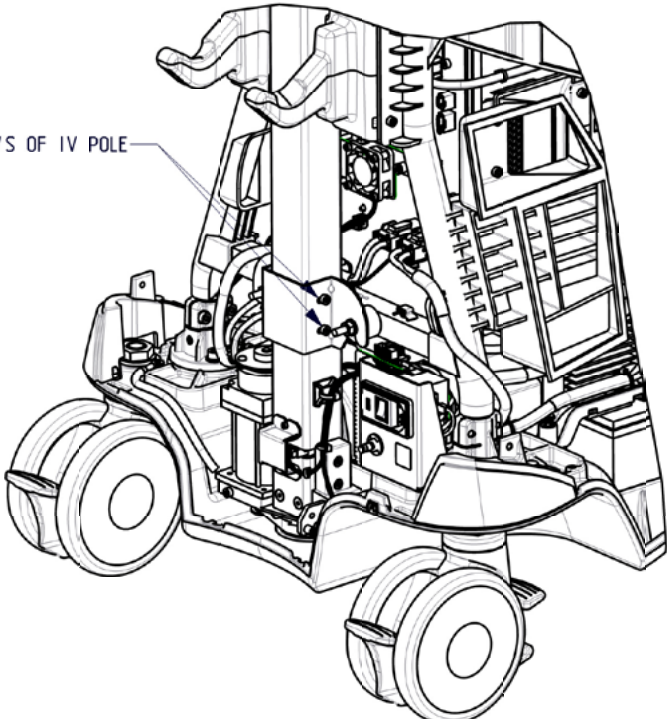


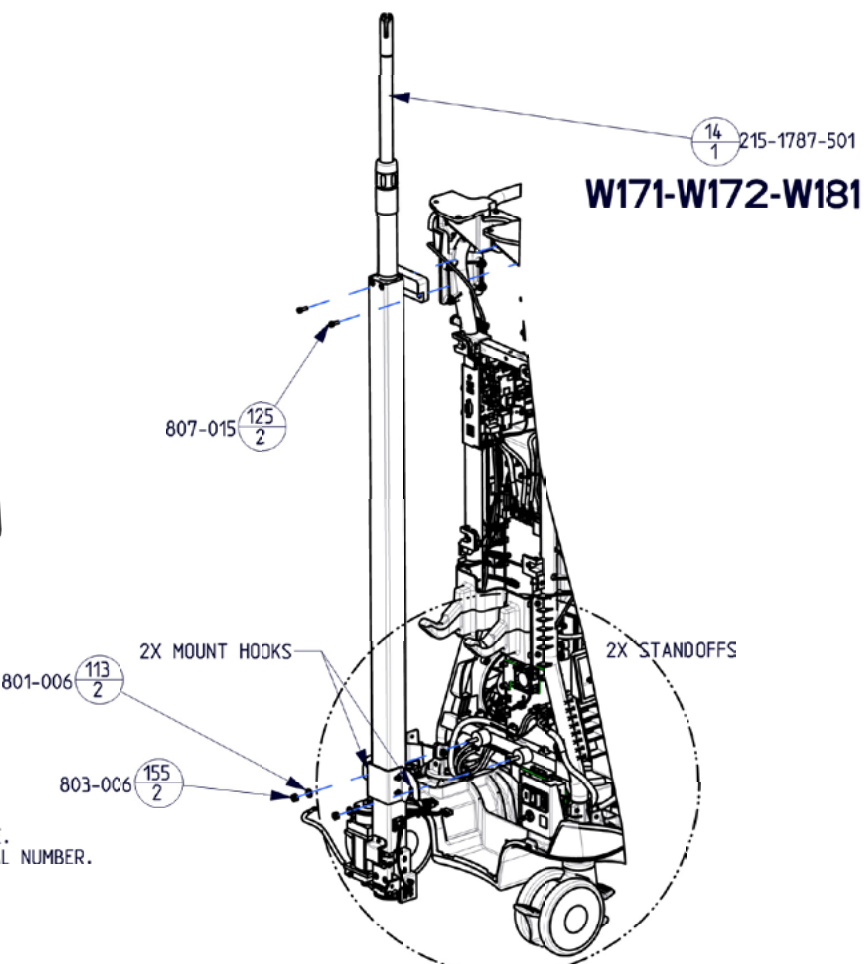


SIZE B	DRAWING NUMBER 215-0000-501	REV AB
SCALE: 7:20		SHEET 96 OF 143

	6	5	4	3	2	1
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DETAIL A



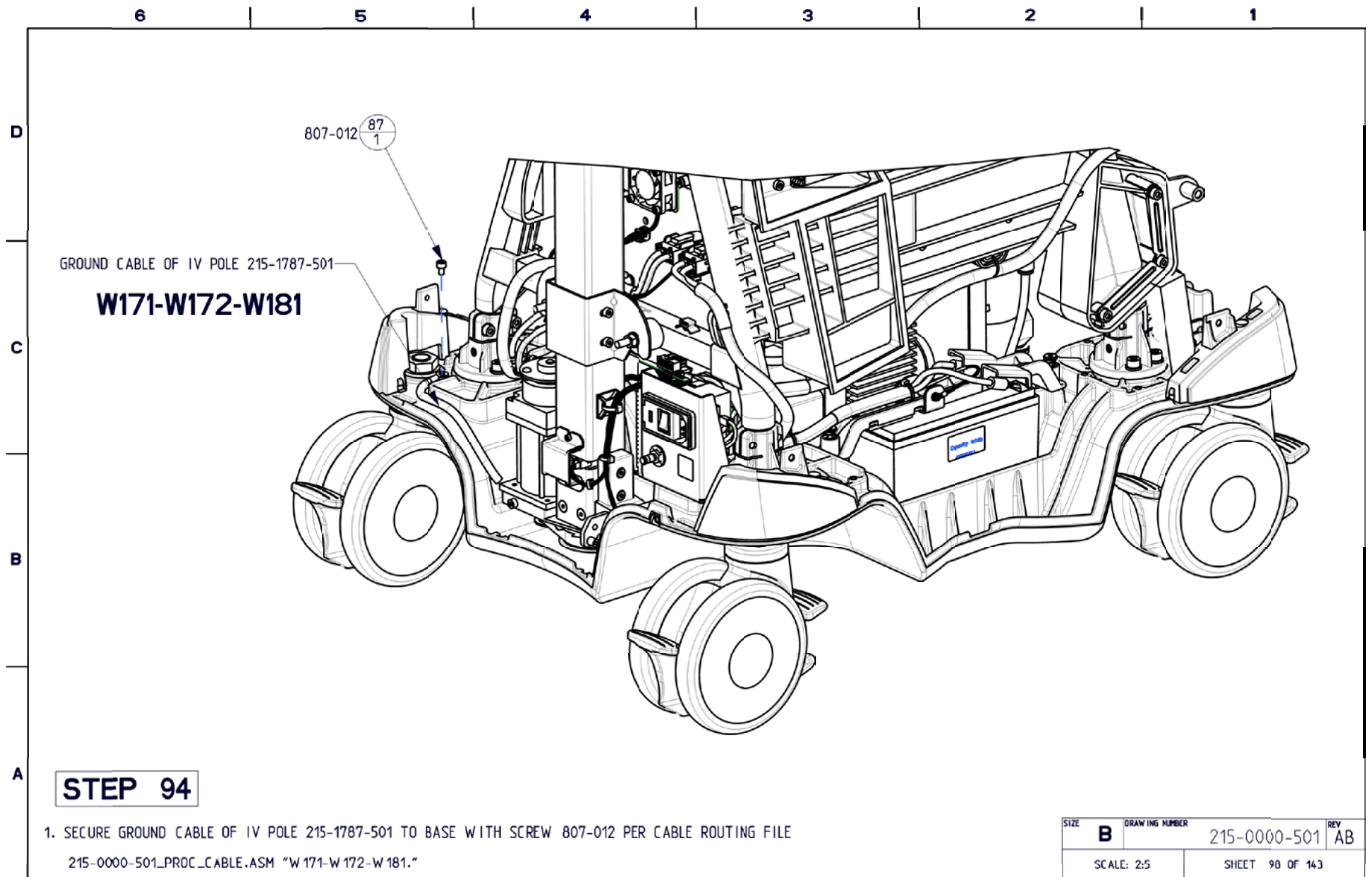


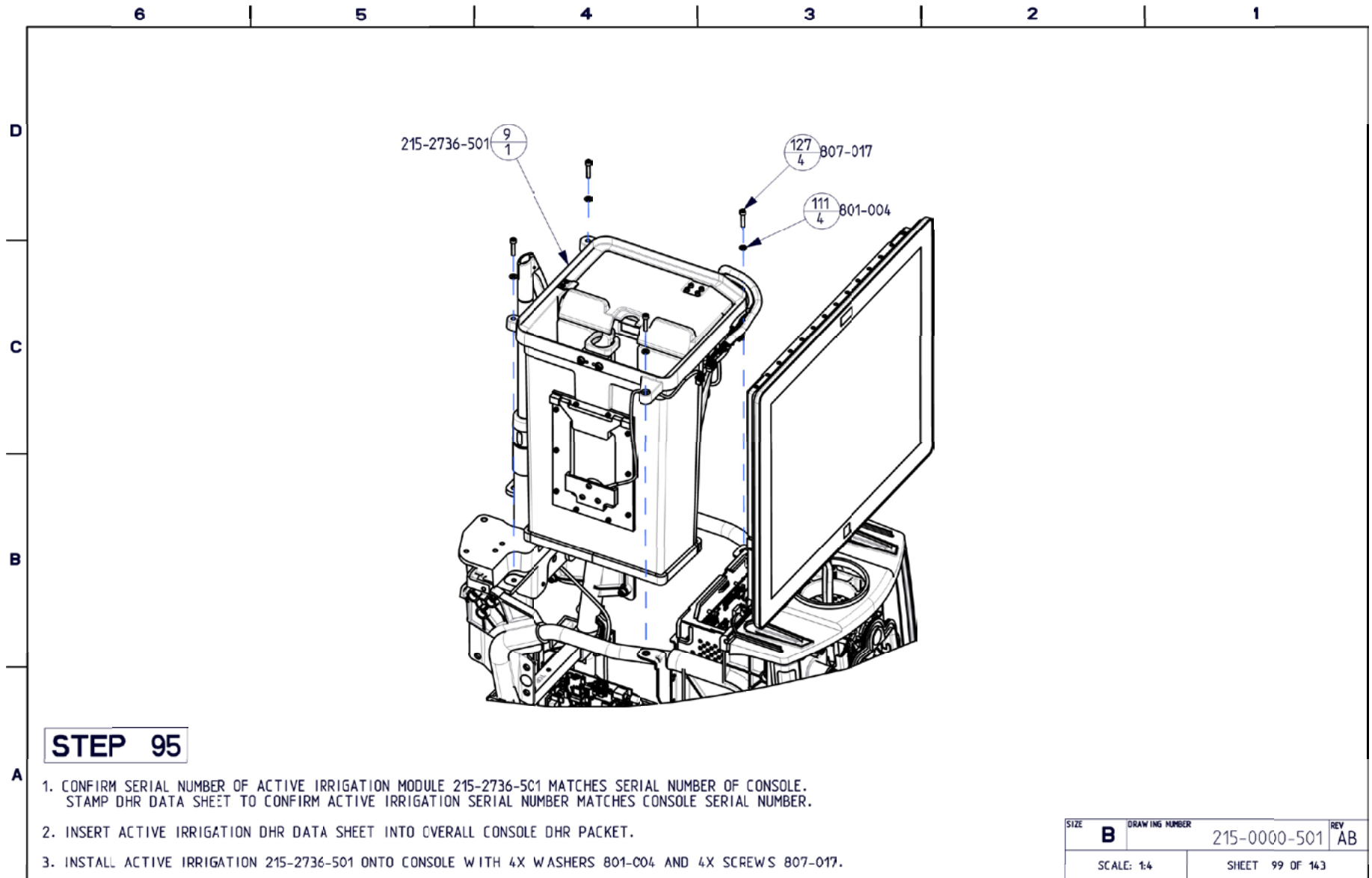
W171-W172-W181

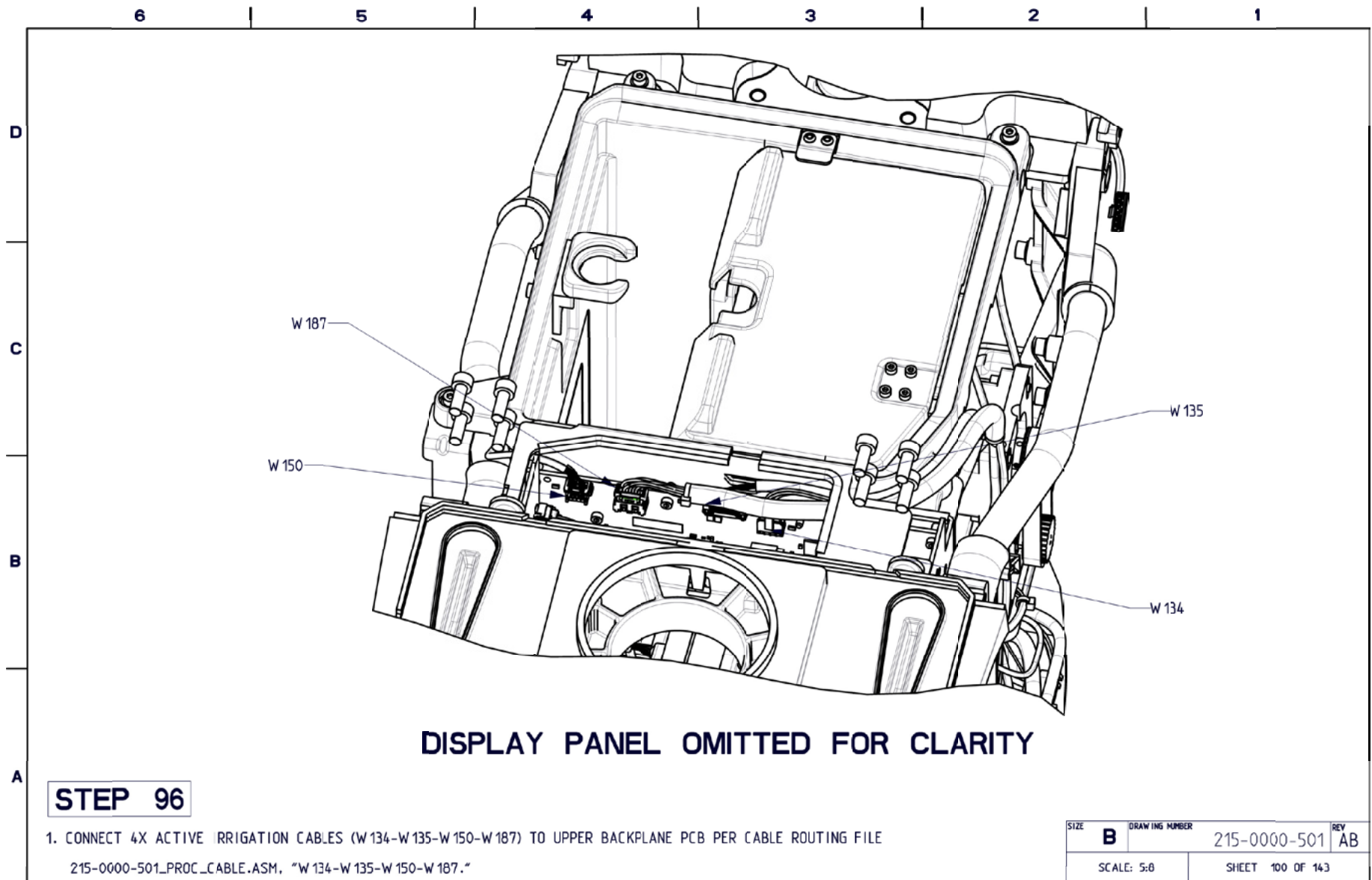
STEP 93

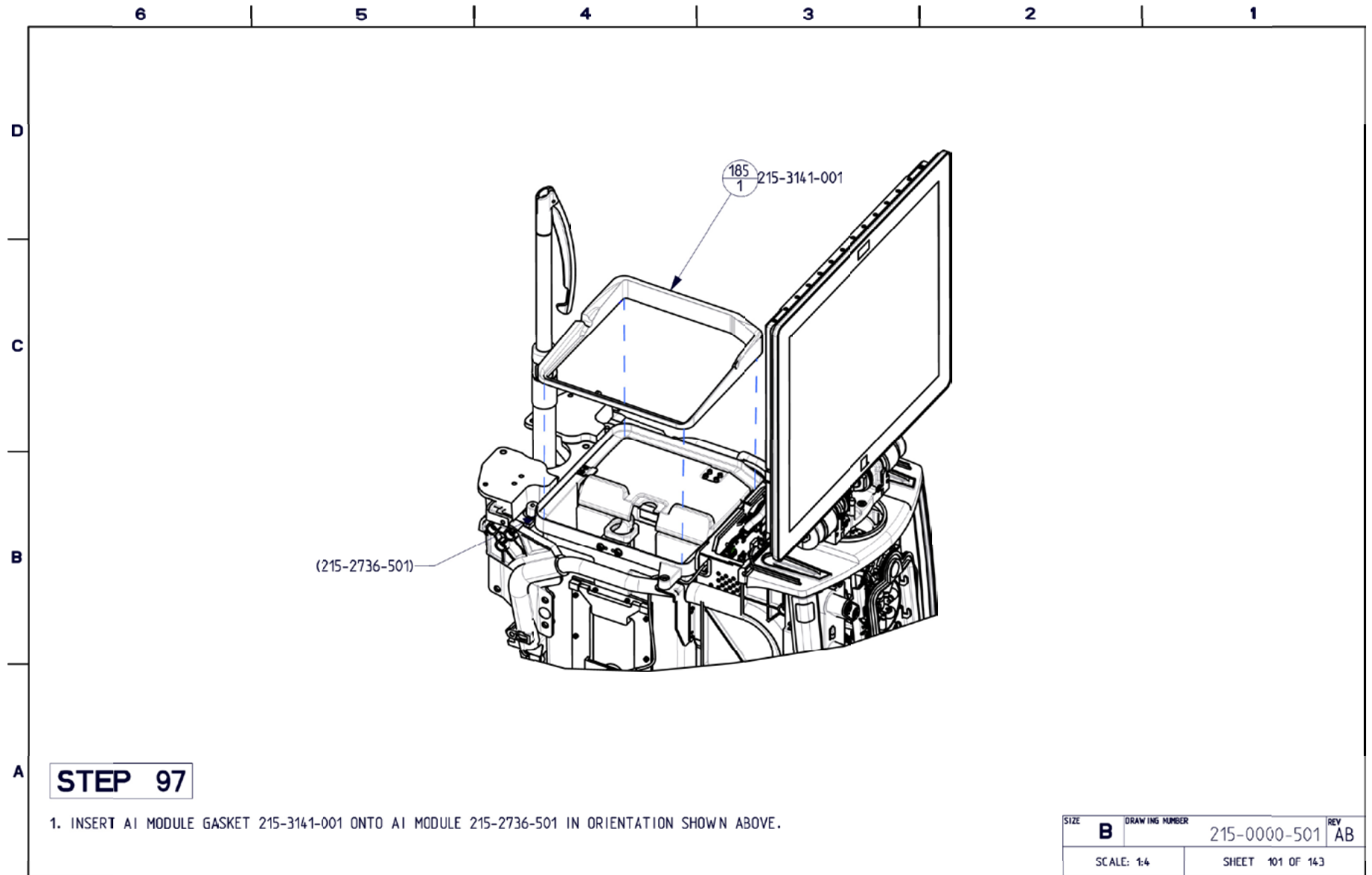
1. CONFIRM SERIAL NUMBER OF IV POLE 215-1787-501 MATCHES SERIAL NUMBER OF CONSOLE. STAMP DHR DATA SHEET TO CONFIRM IV POLE SERIAL NUMBER MATCHES CONSOLE SERIAL NUMBER.
2. INSERT IV POLE DHR DATA SHEET INTO OVERALL CONSOLE DHR PACKET.
3. INSTALL IV POLE ASSY 215-1787-501 ONTO CHASSIS WITH 2X SCREWS 807-015.
4. INSTALL 2X WASHERS 801-006 AND 2X NUTS 803-006 ONTO IDENTIFIED STANDOFFS OF CHASSIS ABOVE.
5. FULLY TIGHTEN 2X IDENTIFIED SCREWS OF IV POLE 215-1787-501 SHOWN IN DETAIL A.
6. ROUTE 2X IV POLE CABLES (W171 & W172) TO MFIO PCB PER CABLE ROUTING FILE 215-0000-501_PROC_CABLE.ASM "W171-W172-W181."

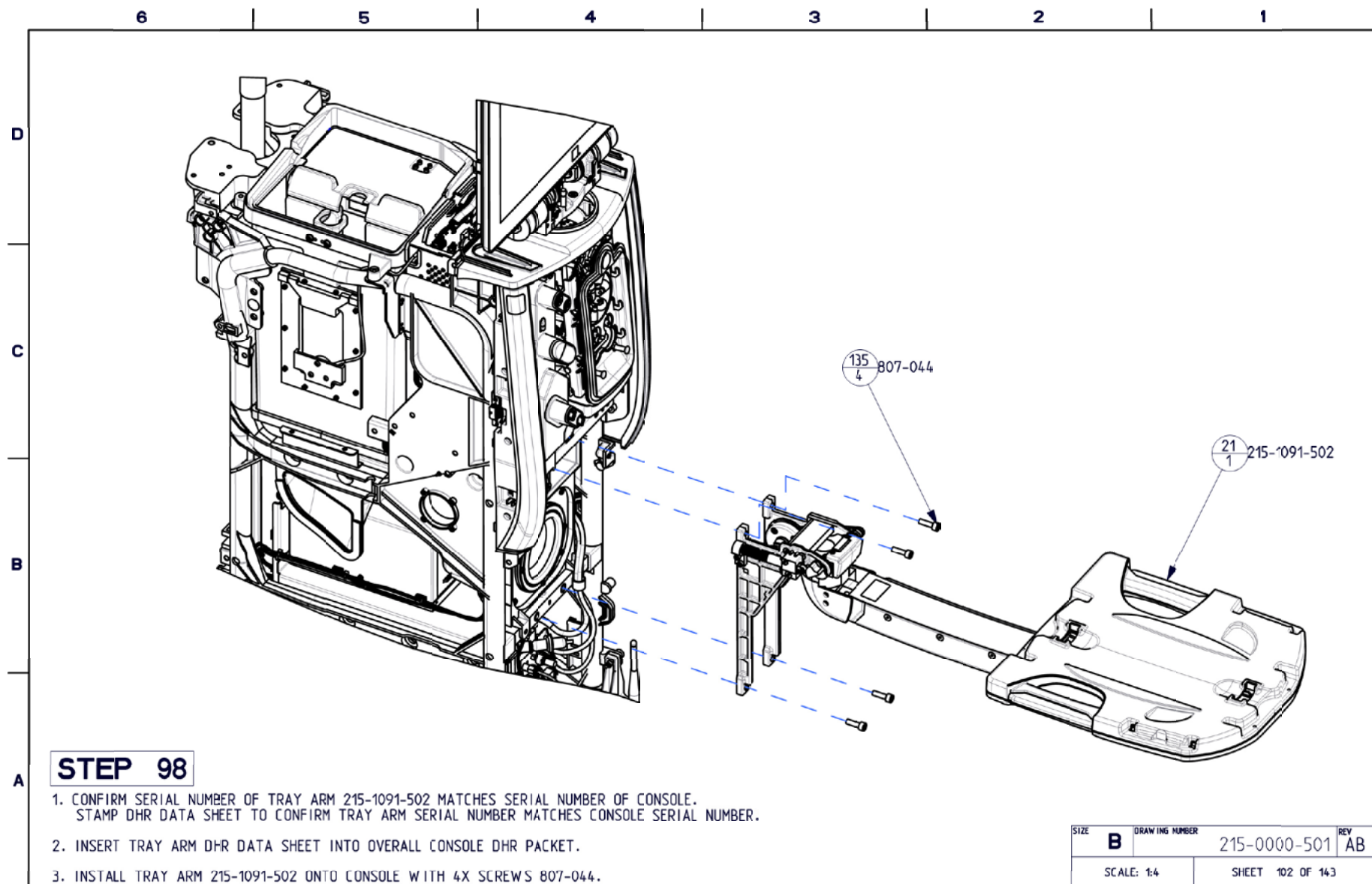
SIZE	B	DRAWING NUMBER	215-0000-501	REV	AB
SCALE: 3:20		SHEET 97 OF 143			

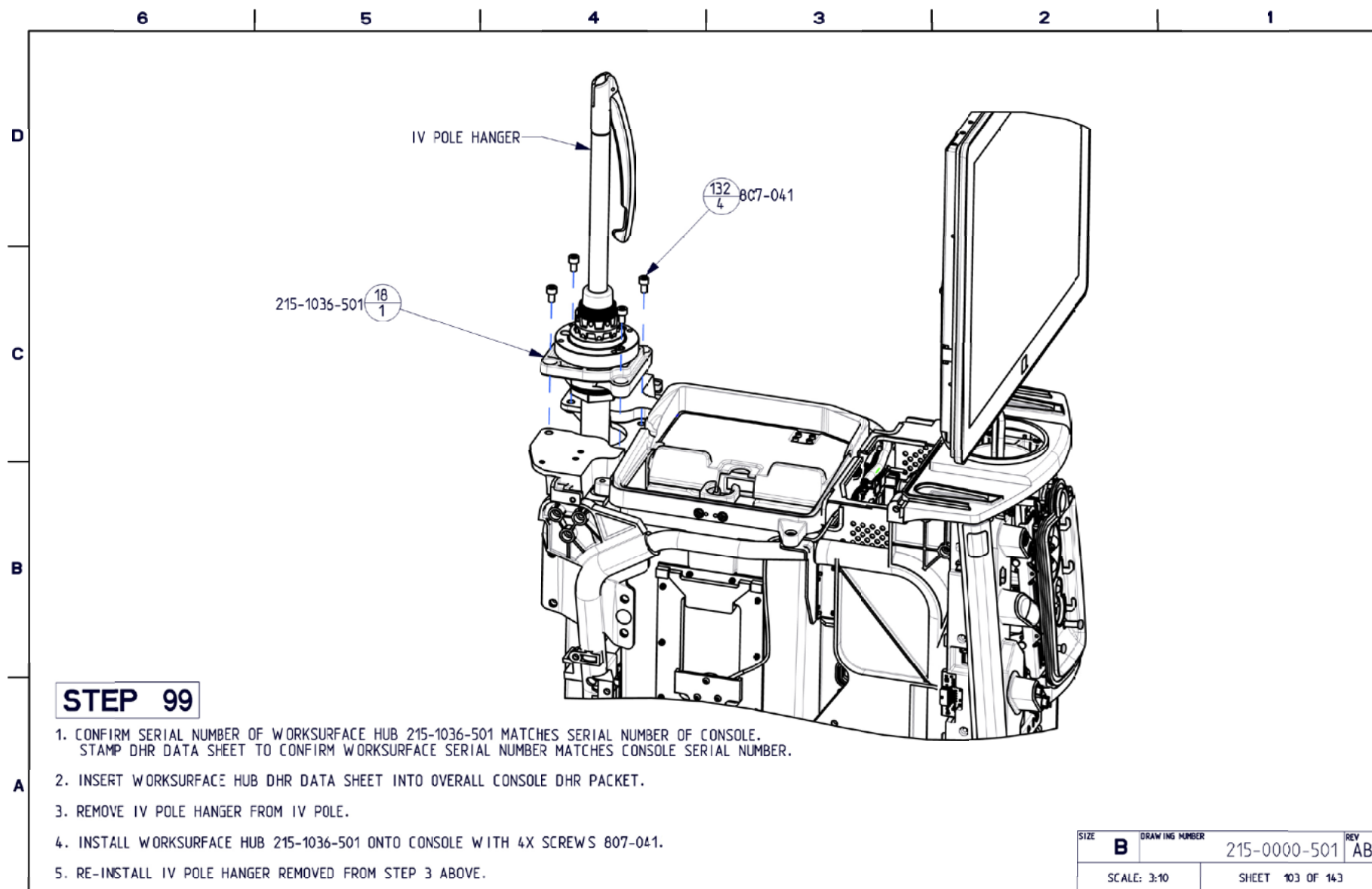


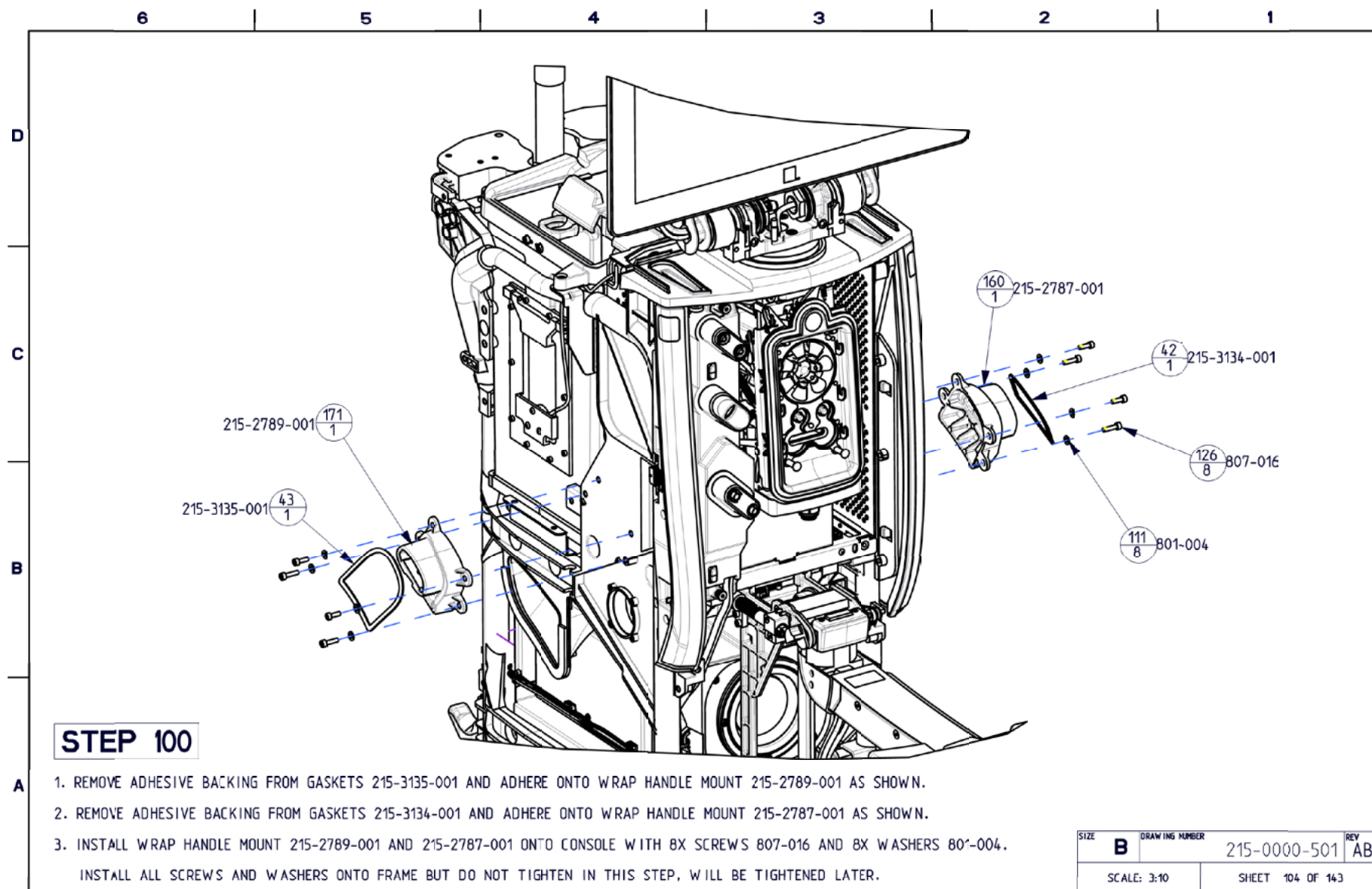


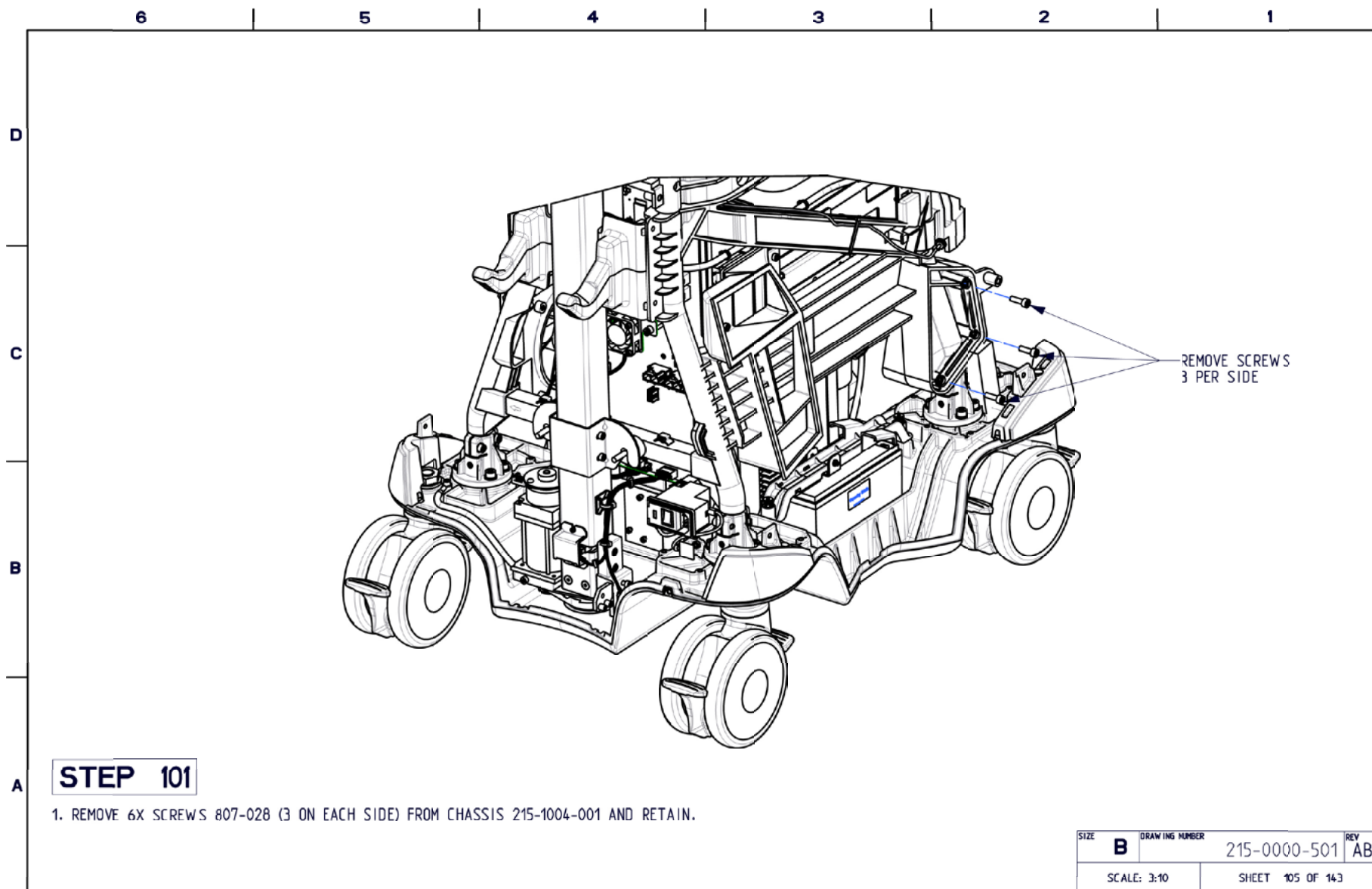








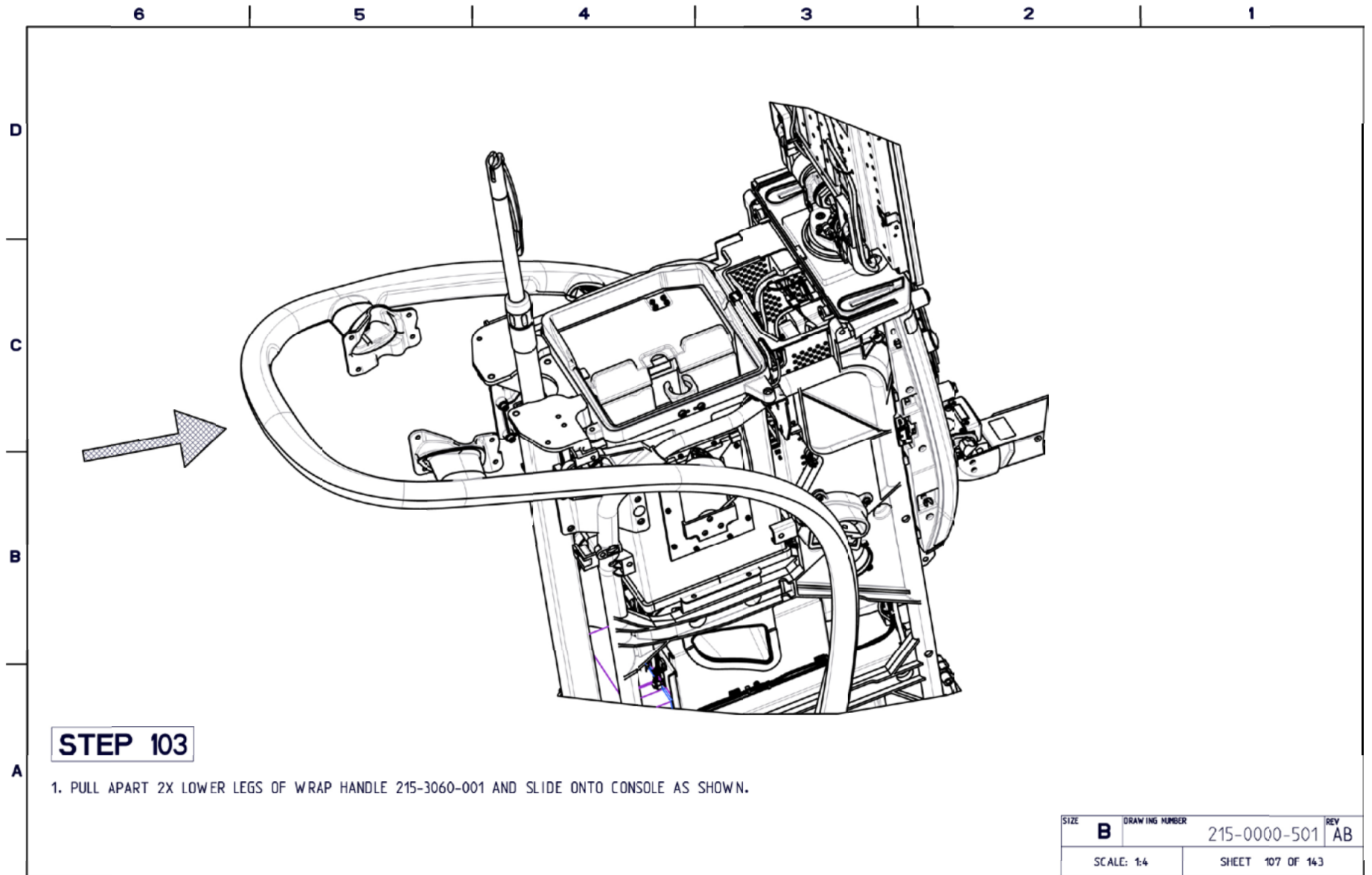


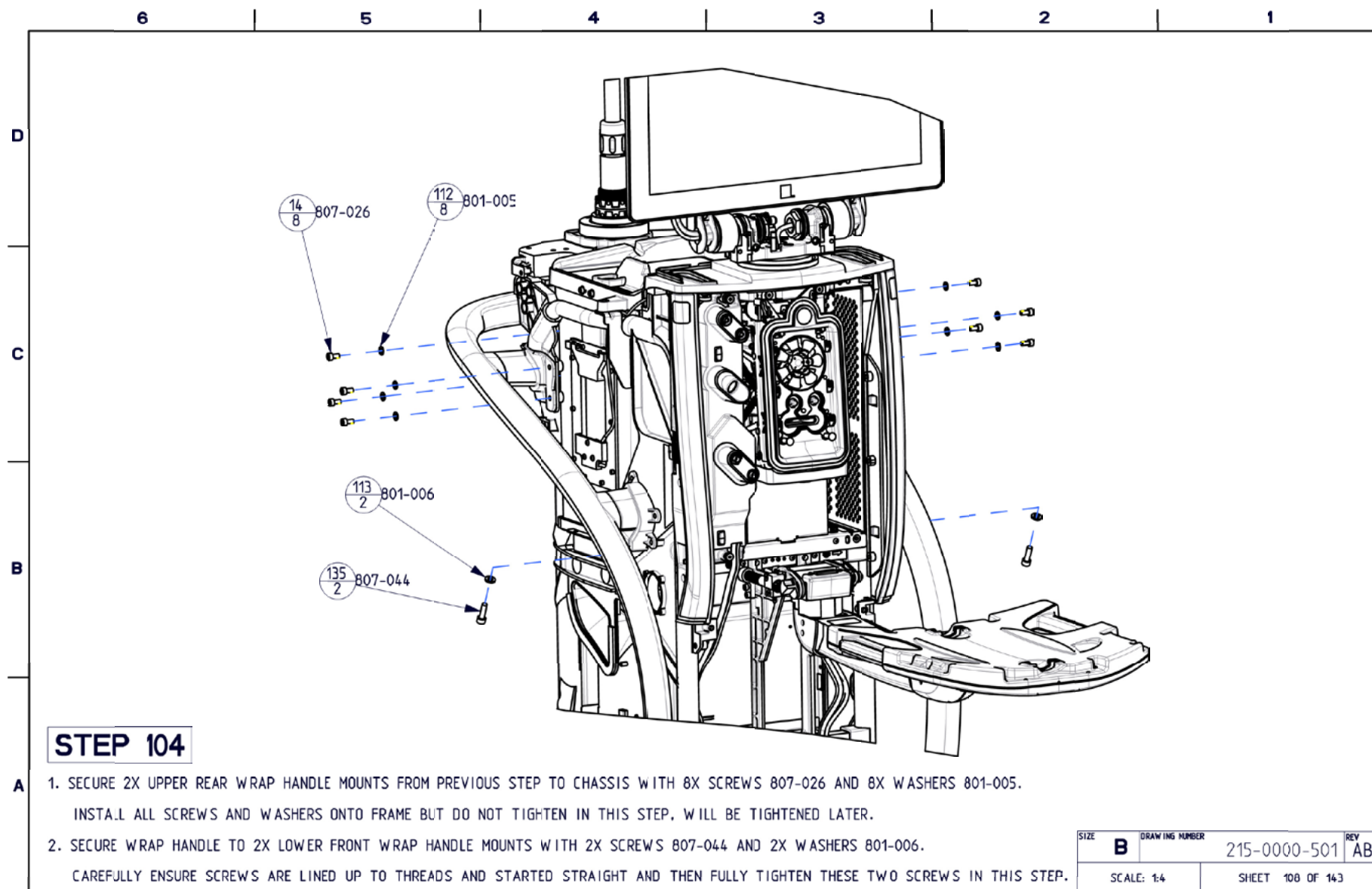




A

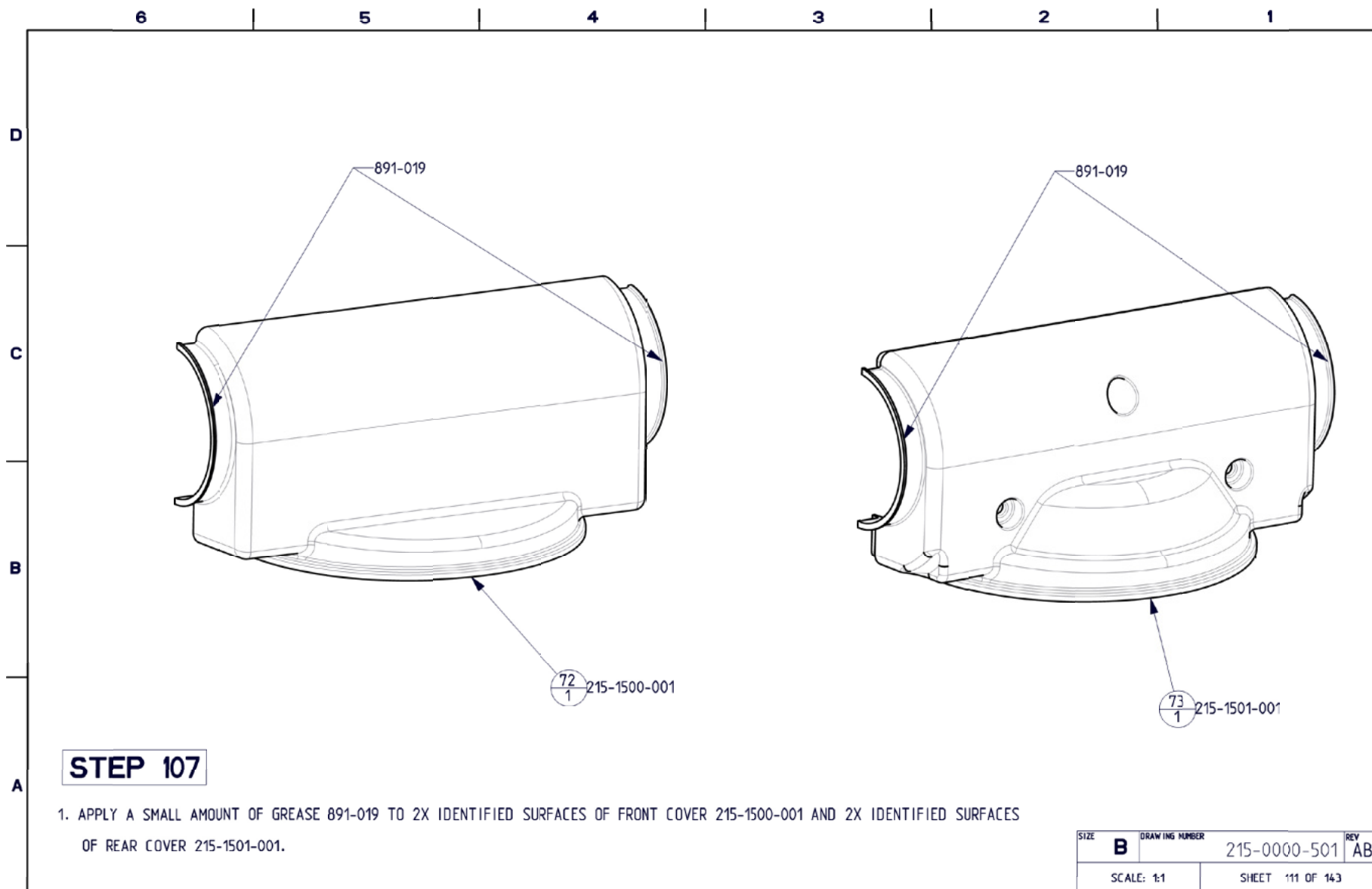
- 6.107

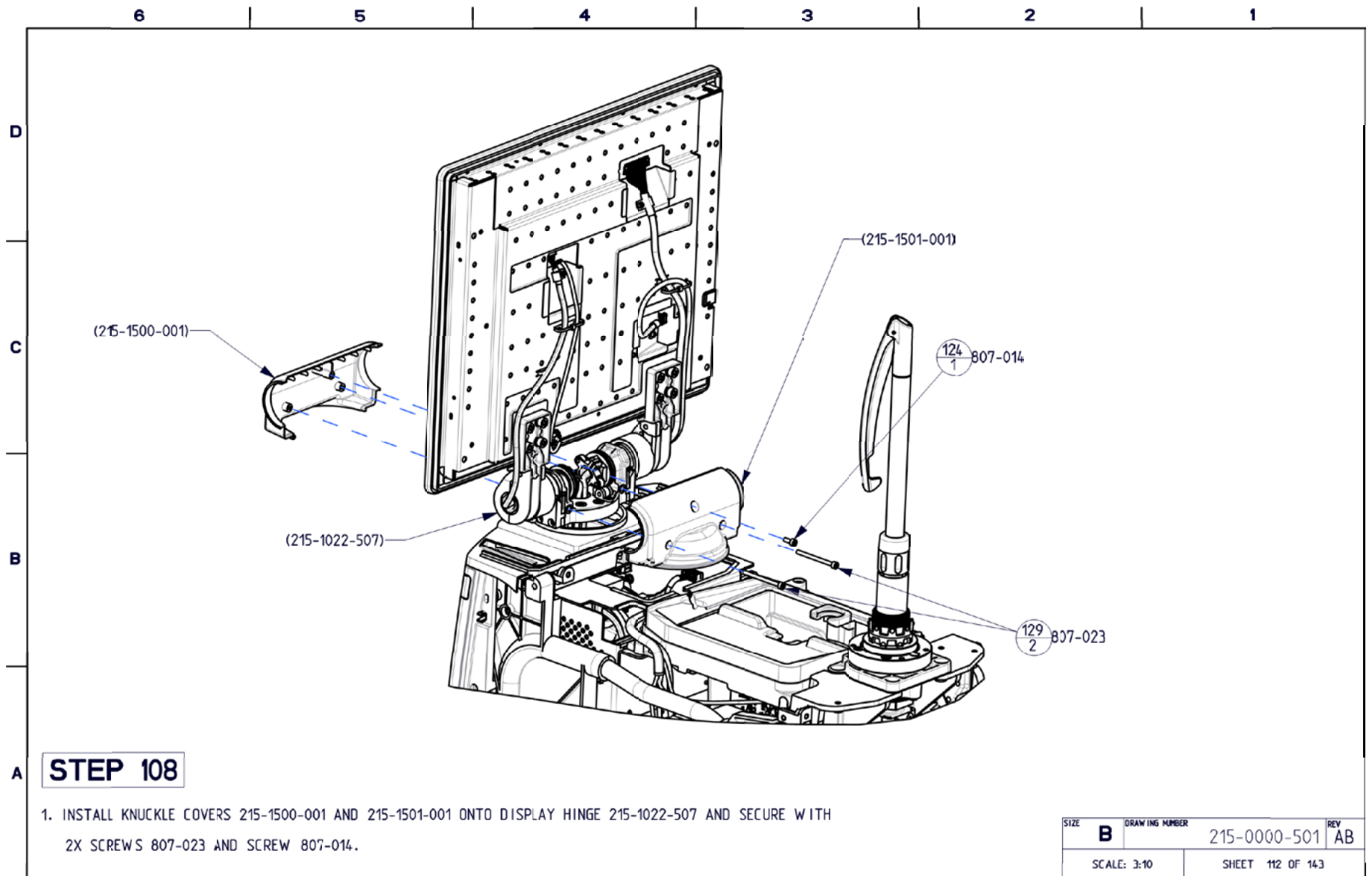


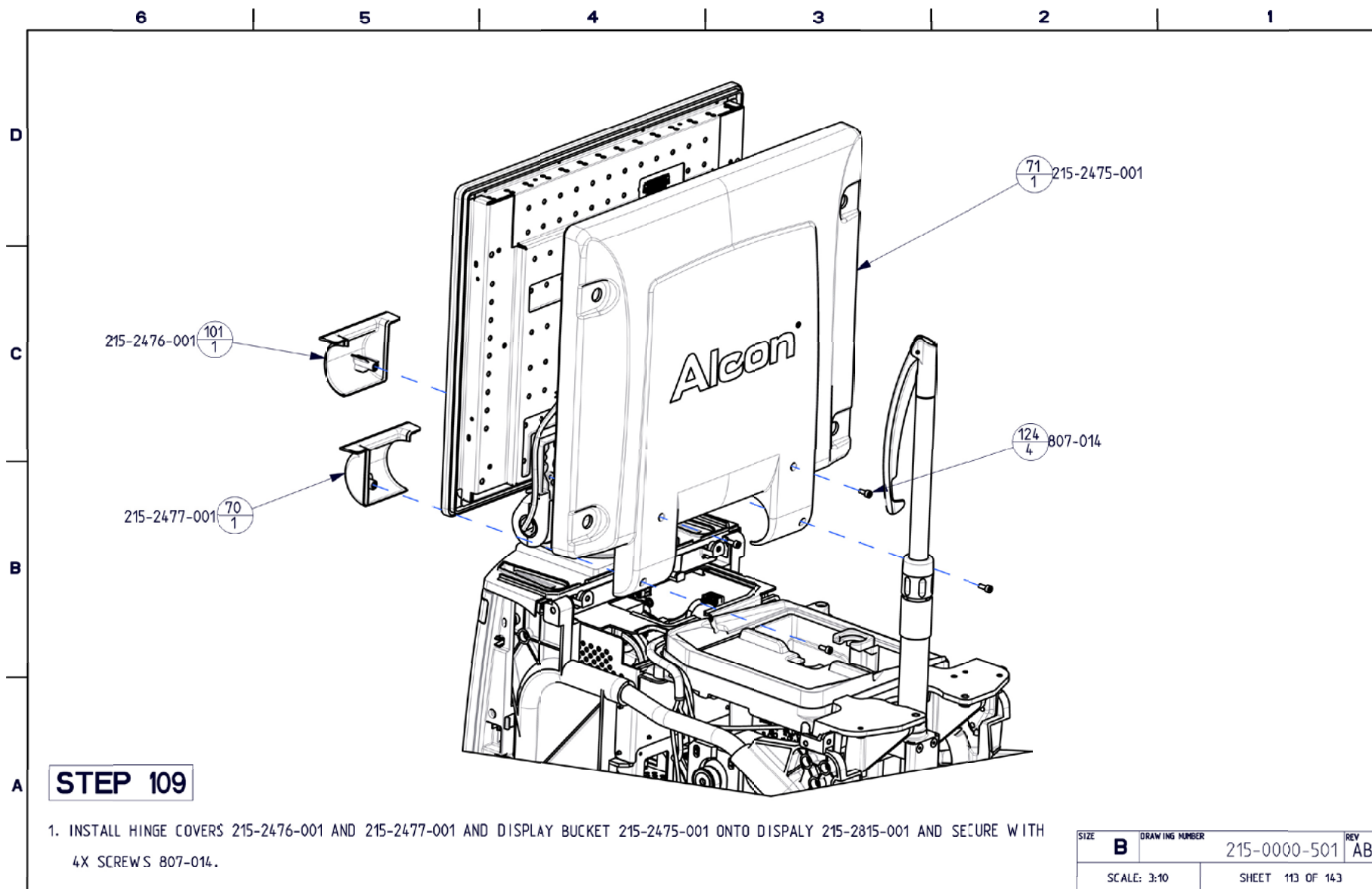








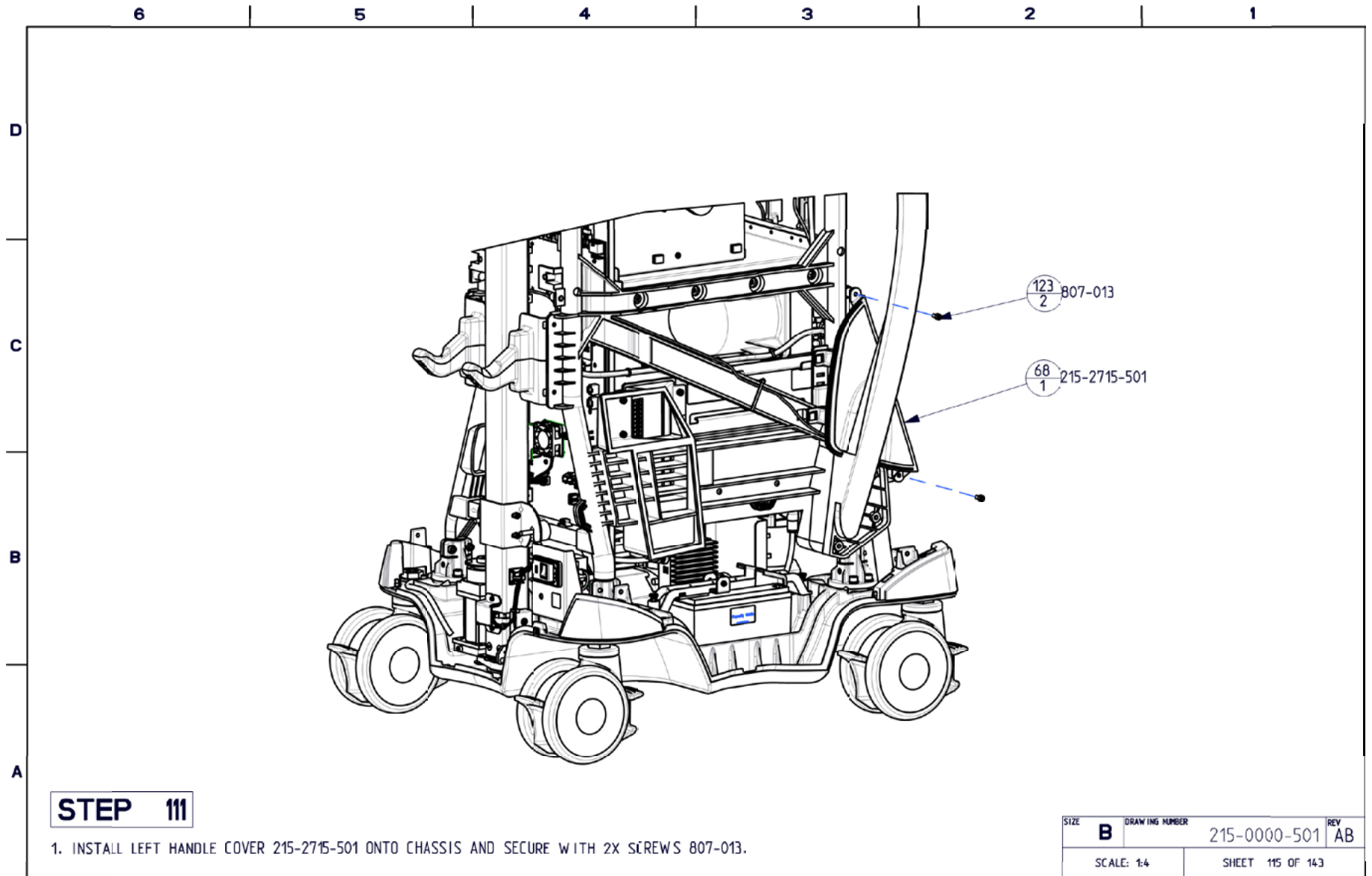


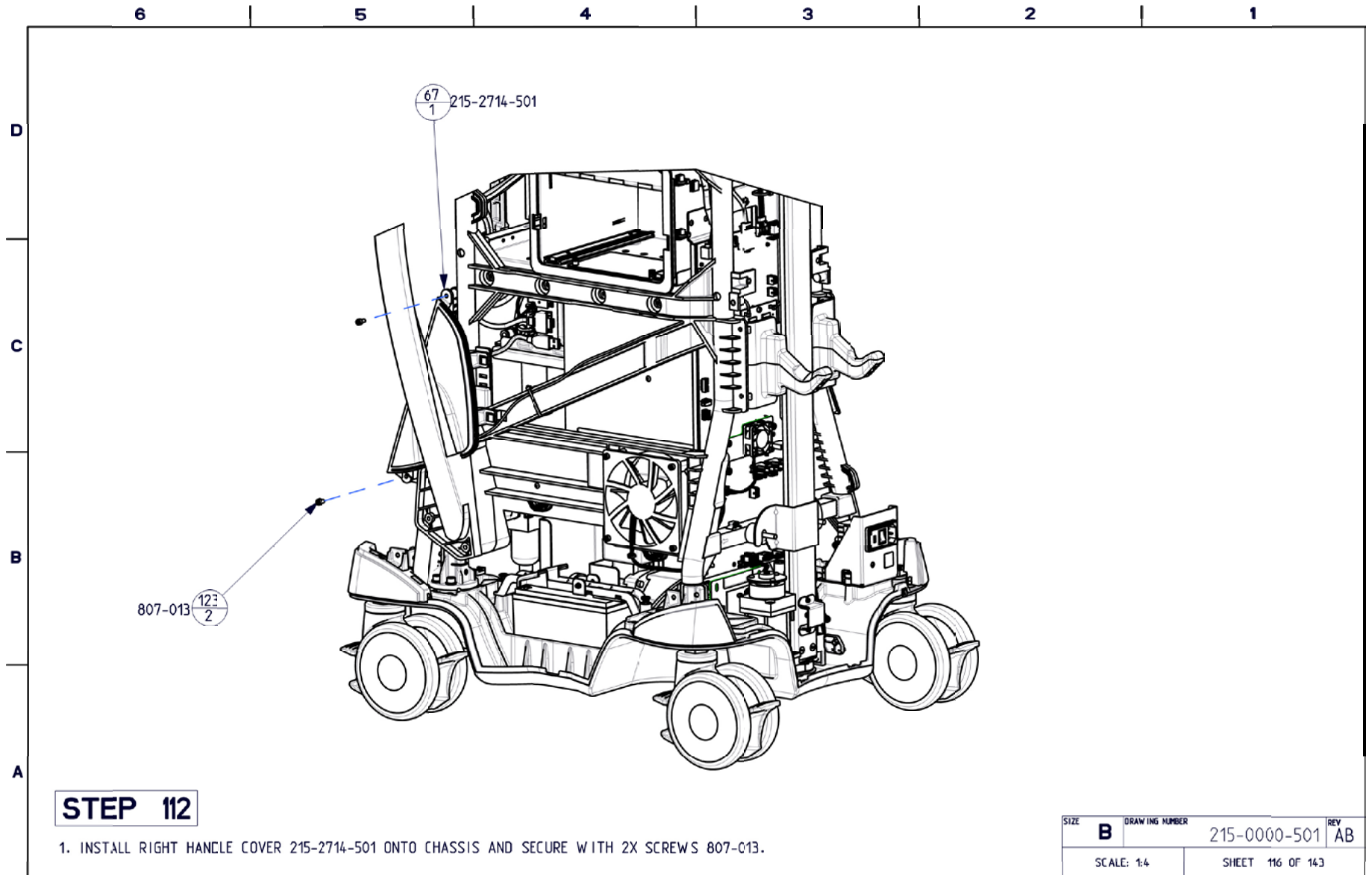




1. REMOVE ADHESIVE BACKING FROM 4X GASKETS 215-1878-001 AND ADHERE GASKETS TO IDENTIFIED LOCATIONS OF DISPLAY BUCKET 215-2475-001.
2. INSTALL DISPLAY WRAP HANDLE 215-1866-001 ONTO DISPLAY 215-2815-001 AND SECURE WITH 4X SCREWS 807-023.

6.115





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TRAY ARM ASSY (215-1091-502) HAS BEEN HIDDEN FOR CLARIFICATION.

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807-015 $\frac{125}{2}$

$\frac{57}{1}$ 215-2346-001

STEP 113

1. INSTALL FRONT FOOT HANDLE PANEL 215-2346-001 ONTO BASE 215-1219-001 AND SECURE WITH 2X SCREWS 807-015.

SIZE	DRAWING NUMBER	REV
B	215-0000-501	AB
SCALE: 3:10		SHEET 117 OF 143

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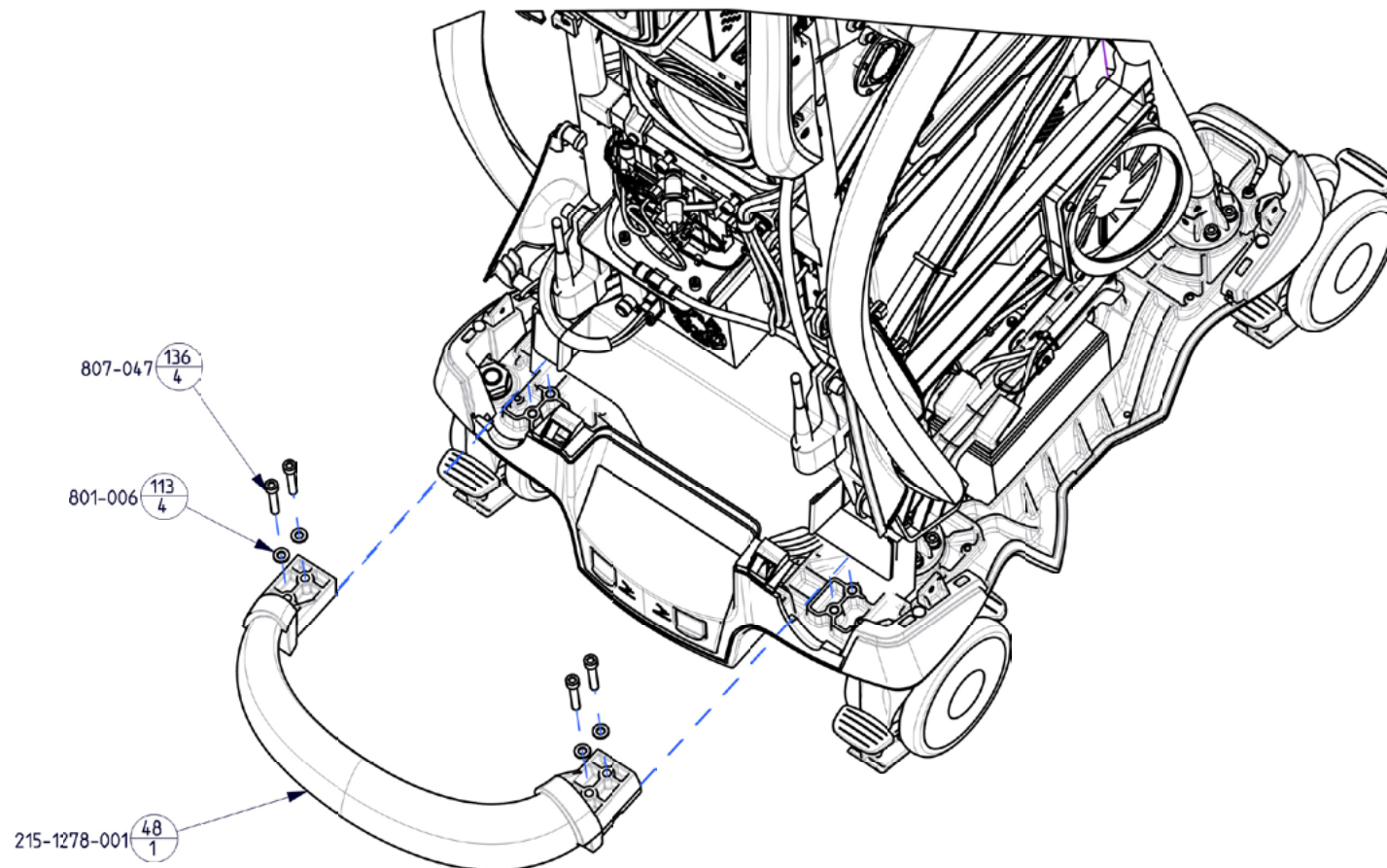
TRAY ARM ASSY (215-1091-502) HAS BEEN HIDDEN FOR CLARIFICATION.

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STEP 114

1. INSTALL FRONT BUMPER 215-1278-001 ONTO BASE 215-1219-001 WITH 4X WASHERS 801-006 AND 4X SCREWS 807-047.

SIZE	DRAWING NUMBER	REV
B	215-0000-501	AB
SCALE: 3:10	SHEET 110 OF 143	

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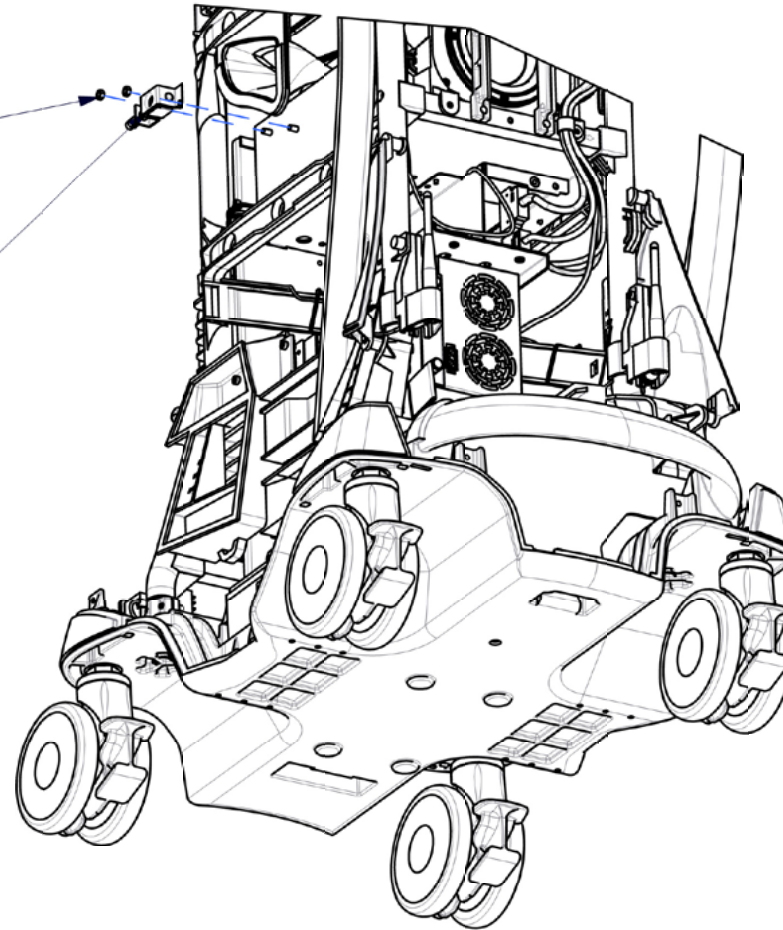
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803-005 $\frac{38}{2}$

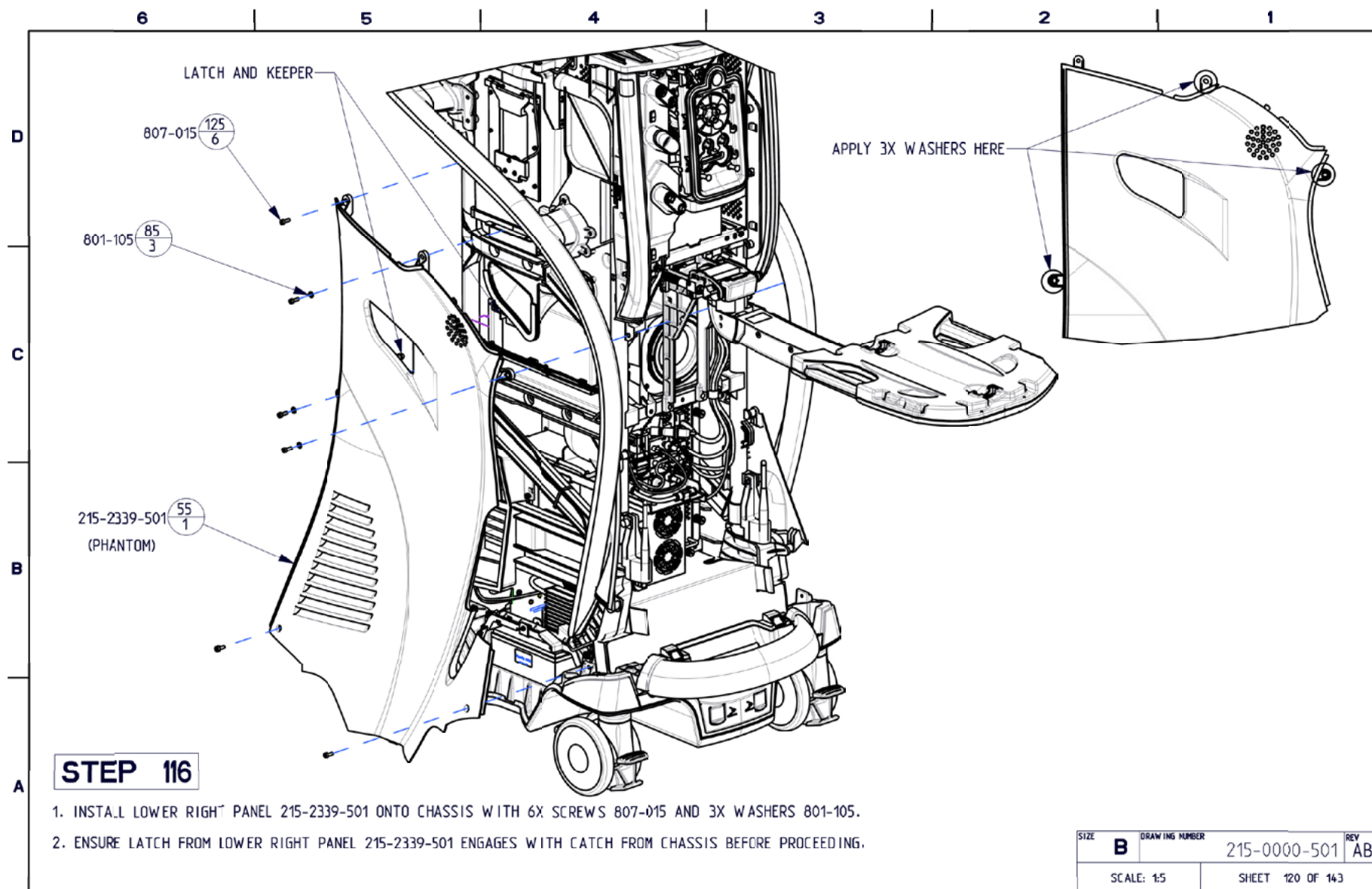
(LATCH FROM 215-2339-501)

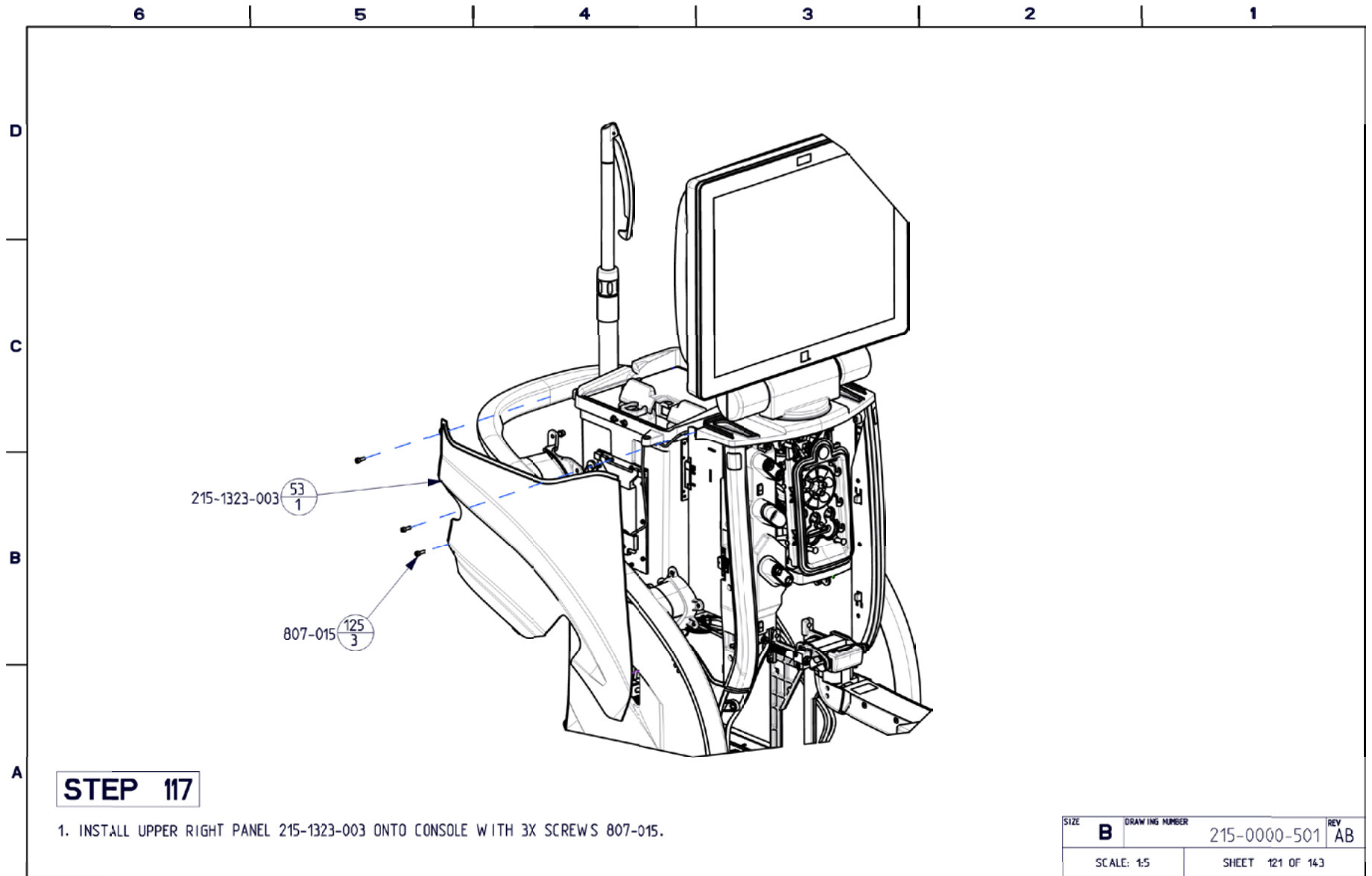


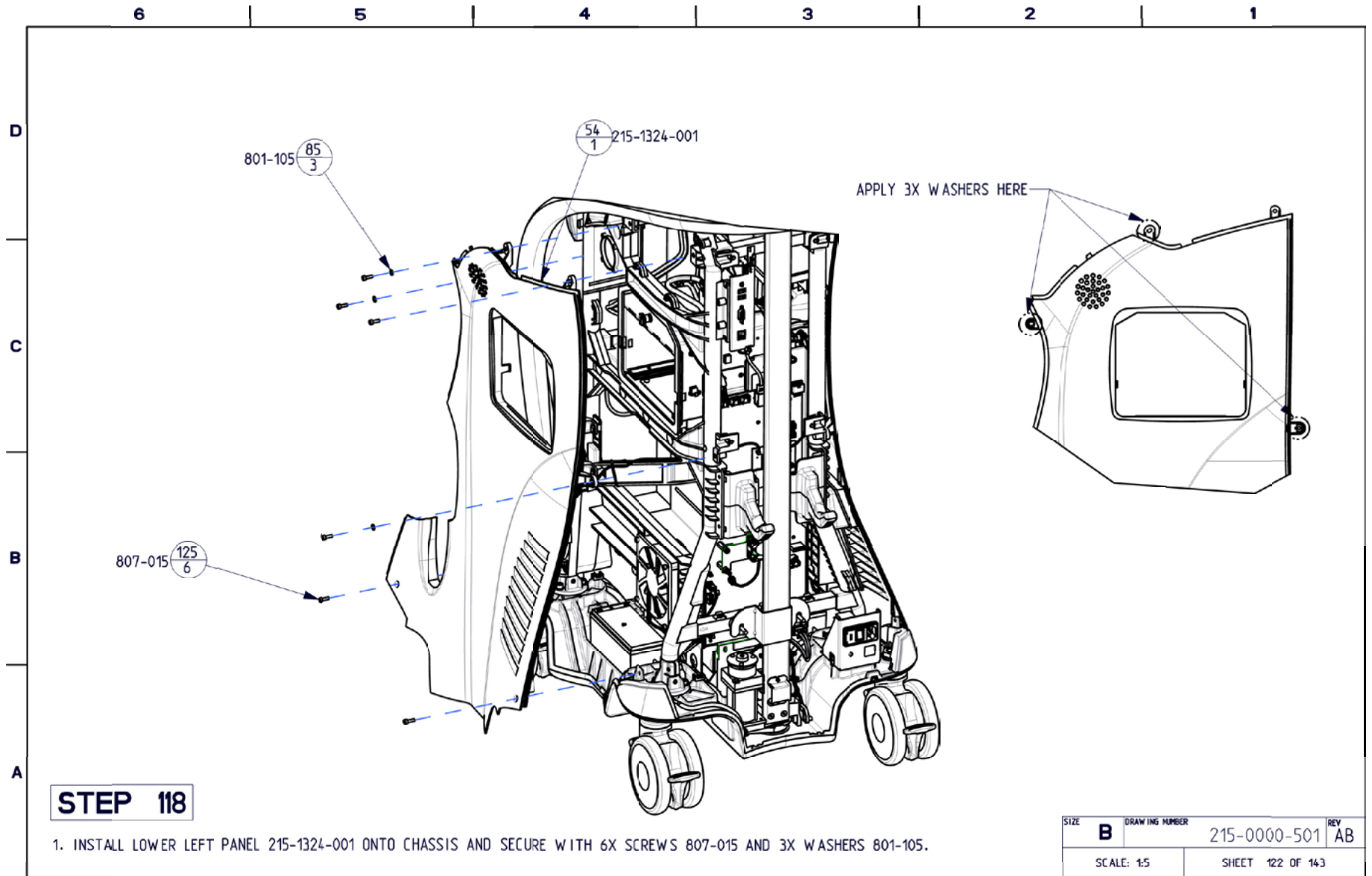
STEP 115

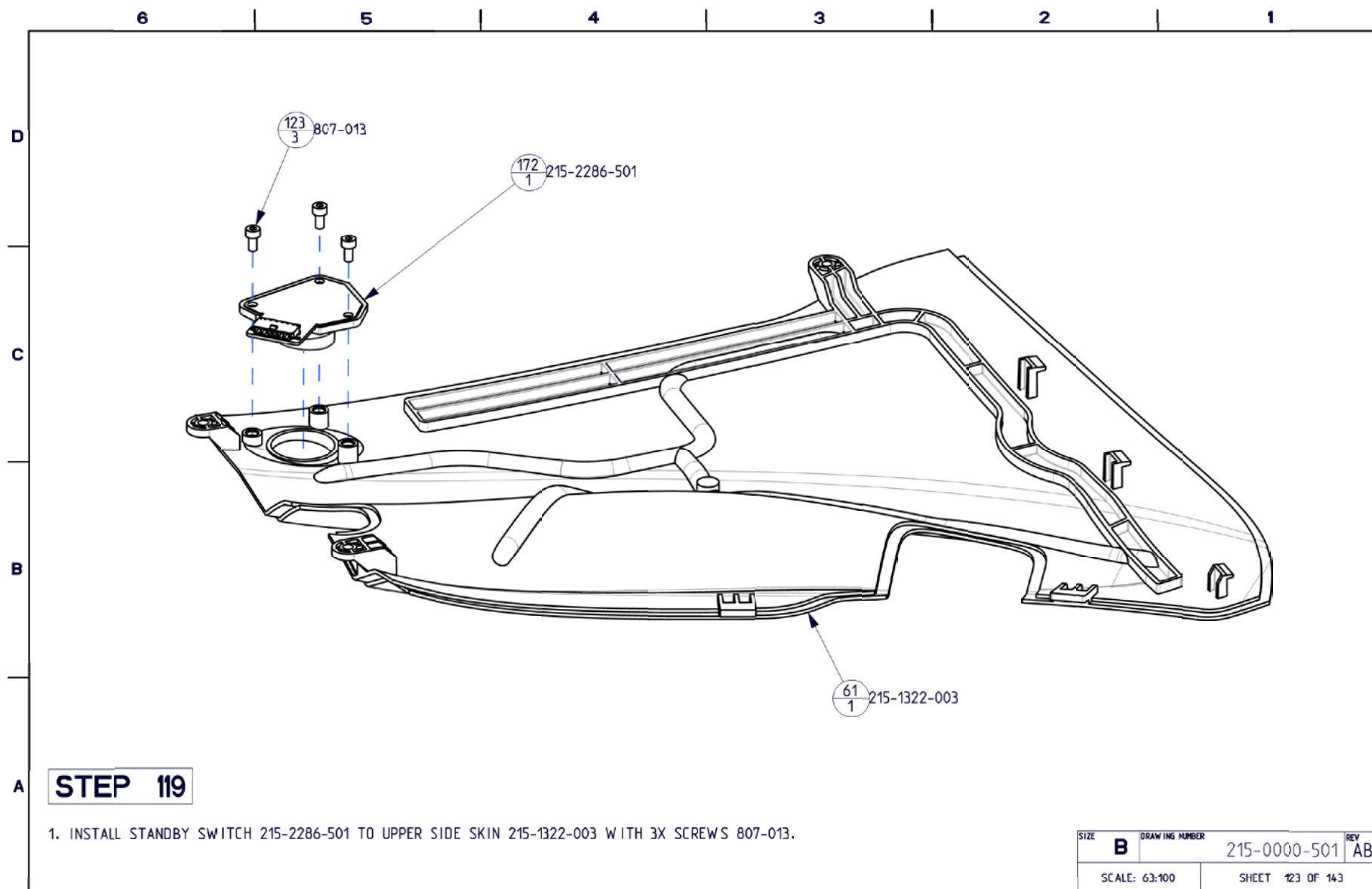
1. ASSEMBLE 215-2339-501 PER 215-2339-501.DRW, LATEST REV. PERFORM 2-WAY CHECK PER DHR CHECK SHEET.
2. INSTALL LATCH FROM 215-2339-501 ONTO CHASSIS WITH 2X NUTS 803-005.

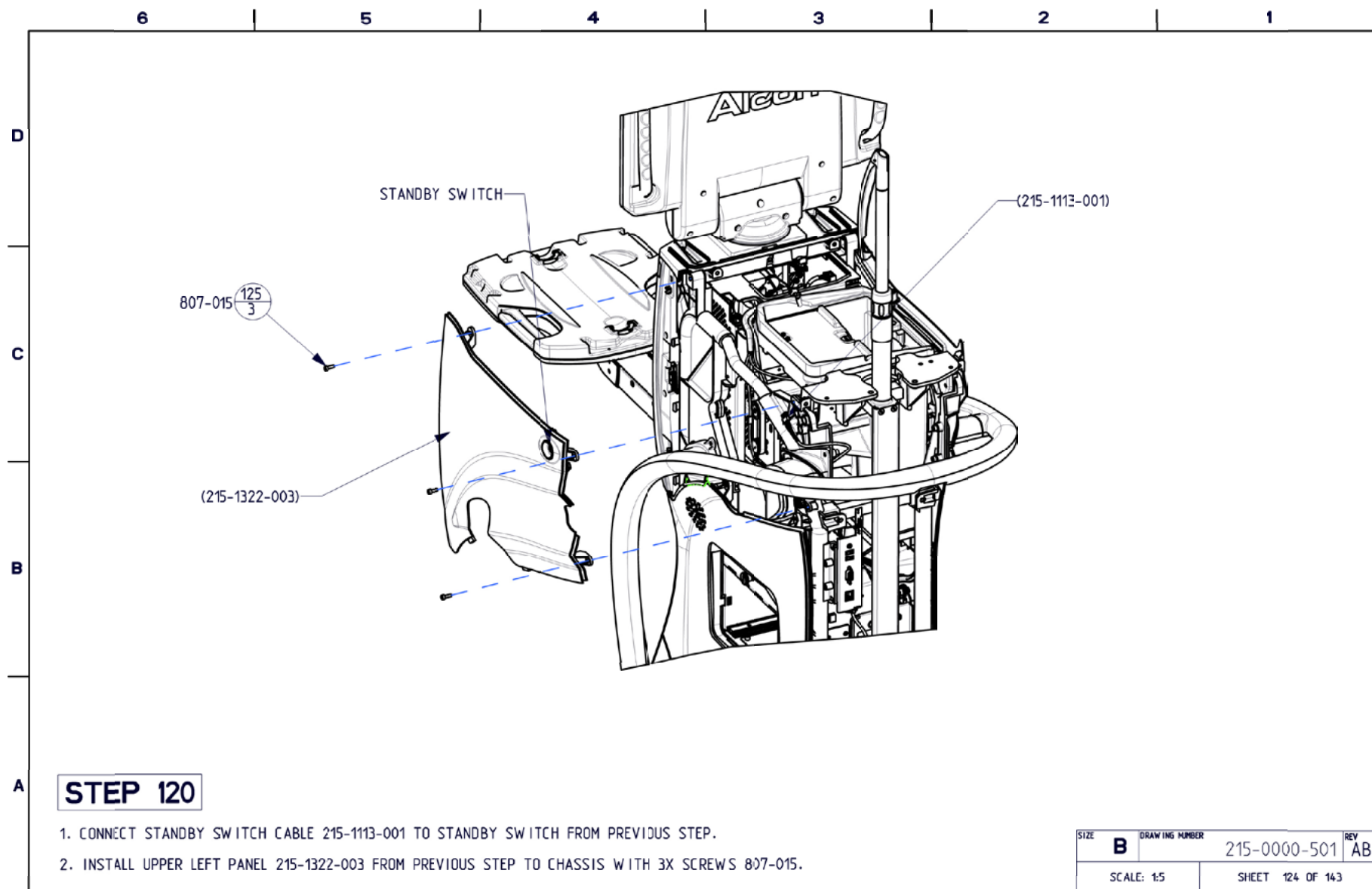
SIZE	B	DRAWING NUMBER	215-0000-501	REV	AB
SCALE: 1:4		SHEET 119 OF 143			

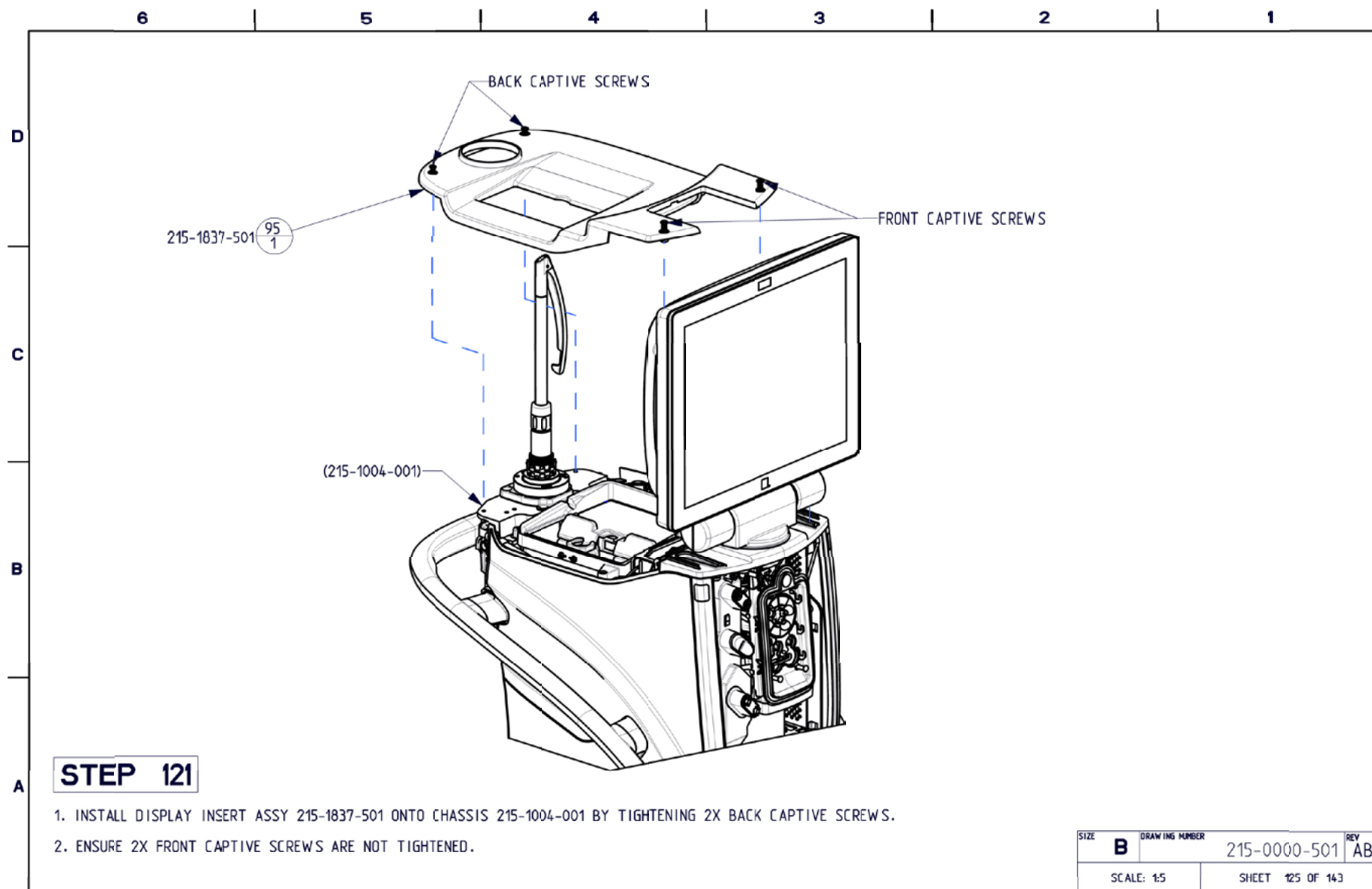


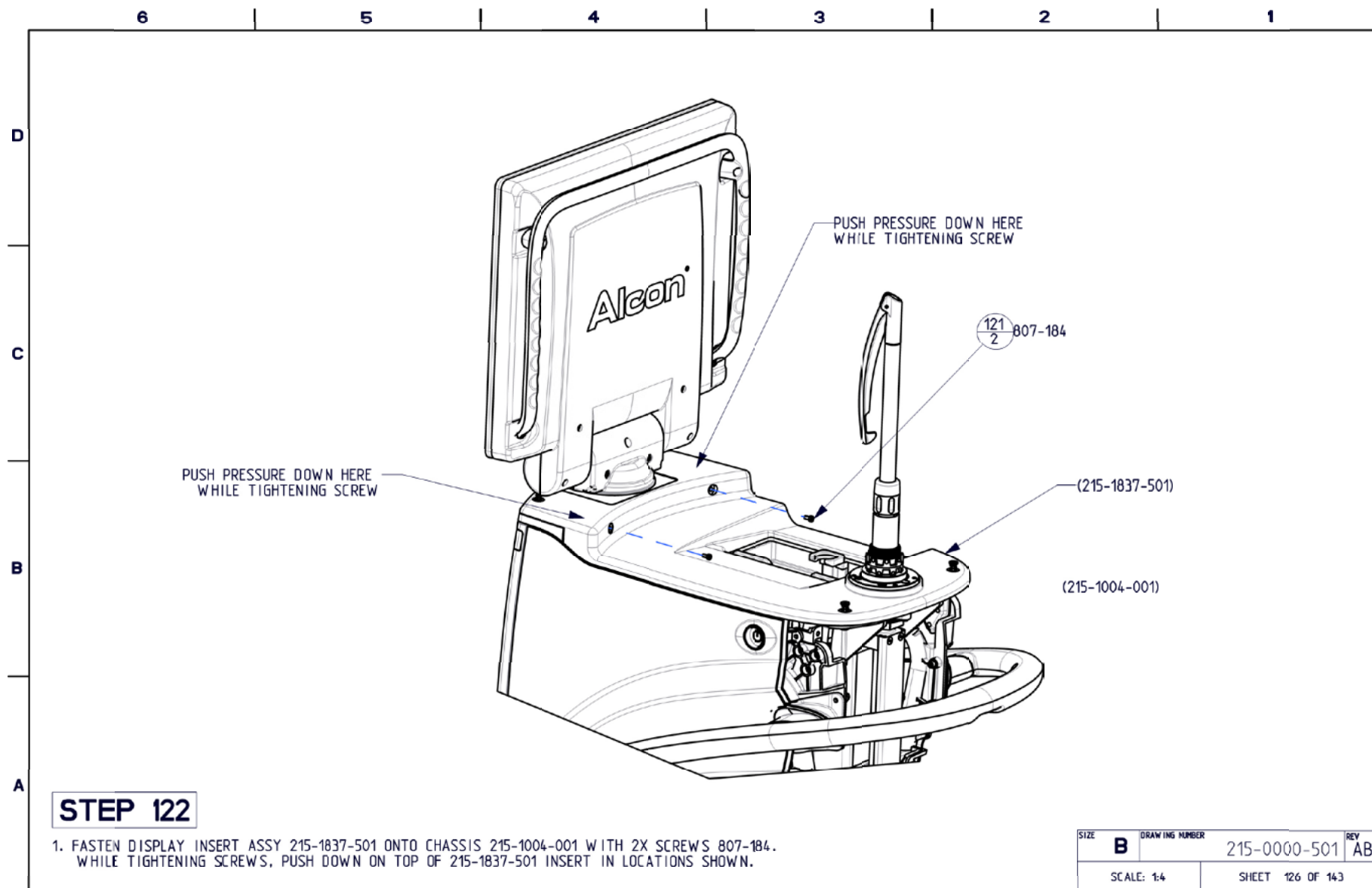


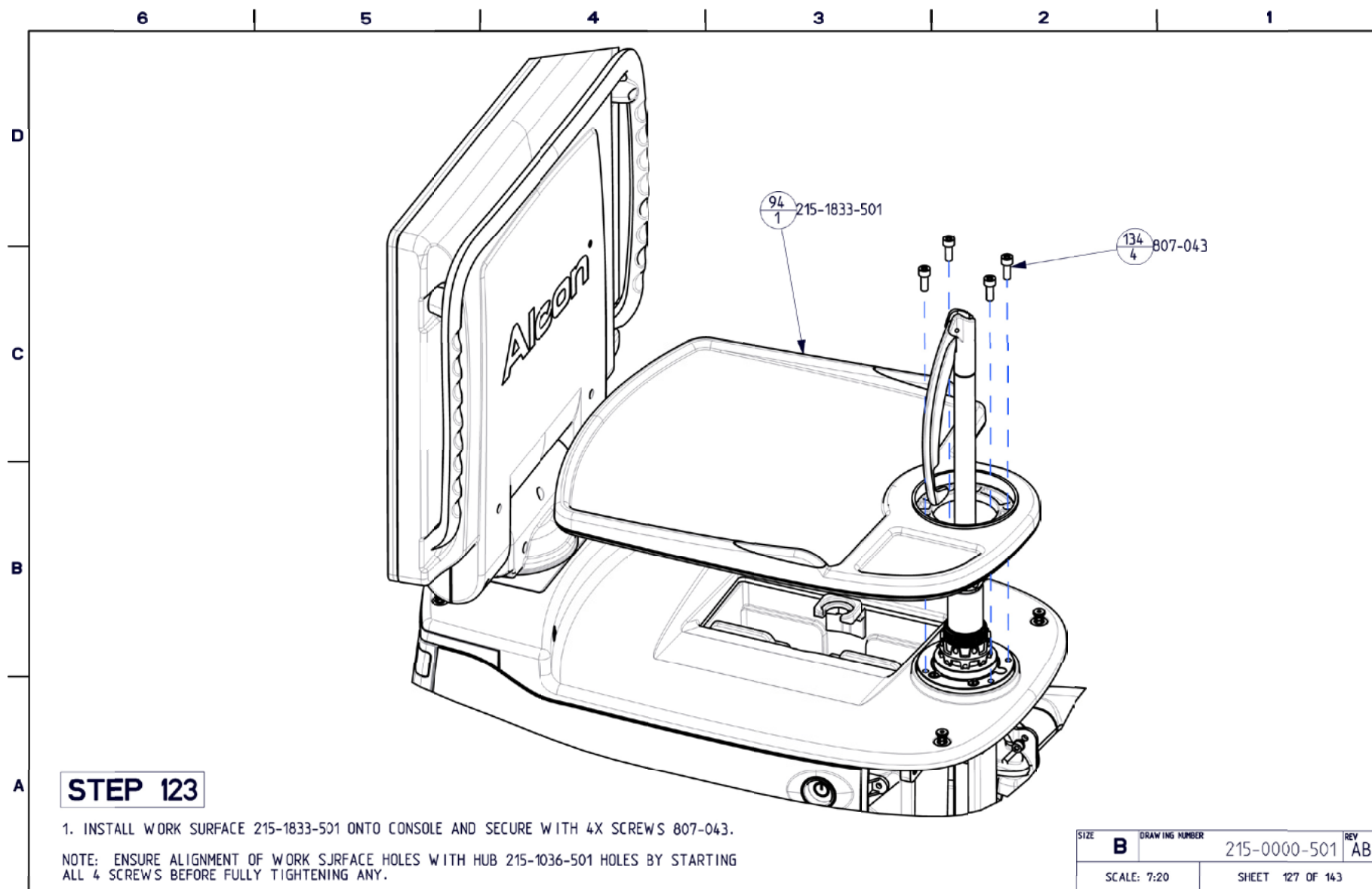




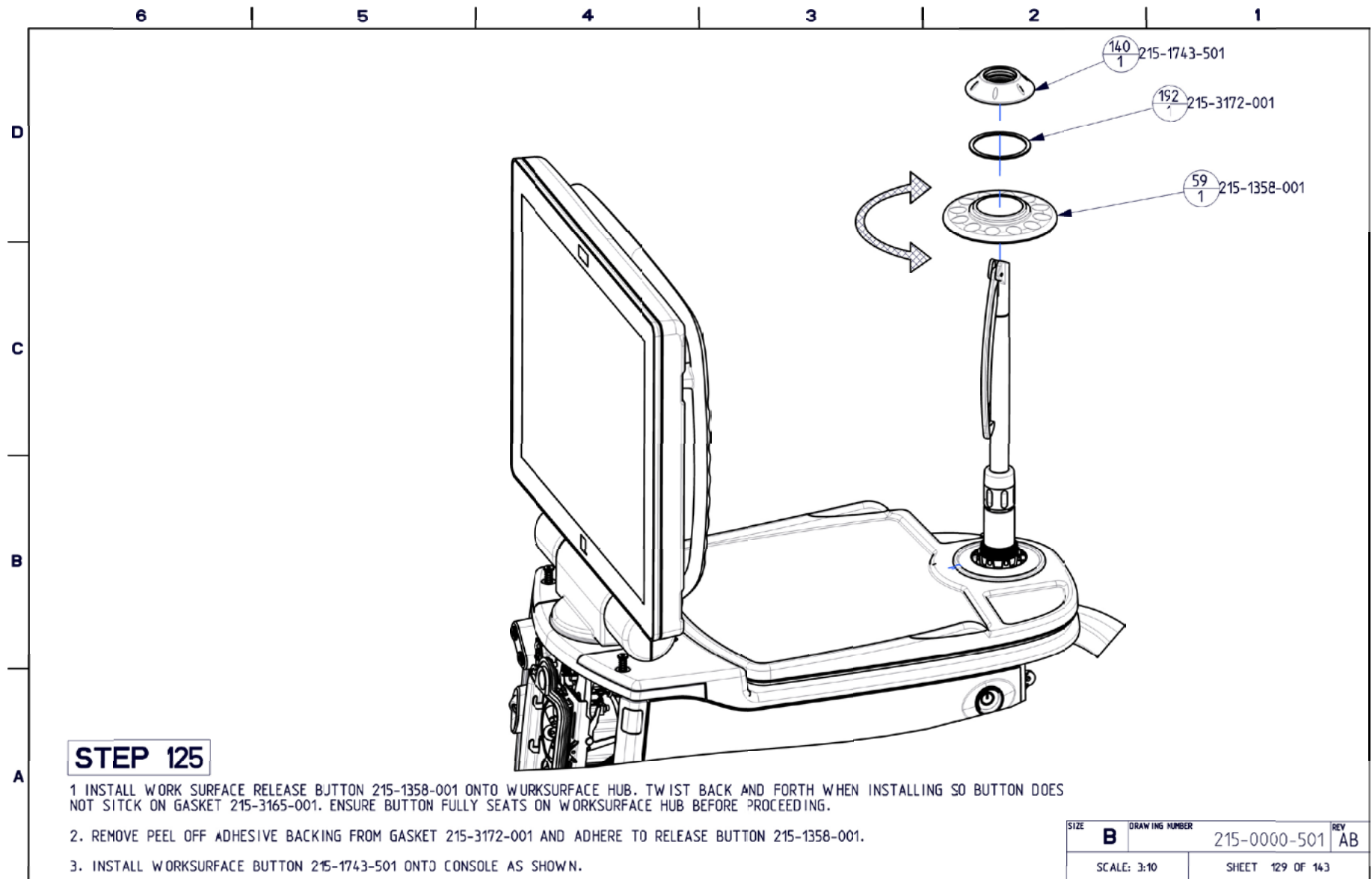


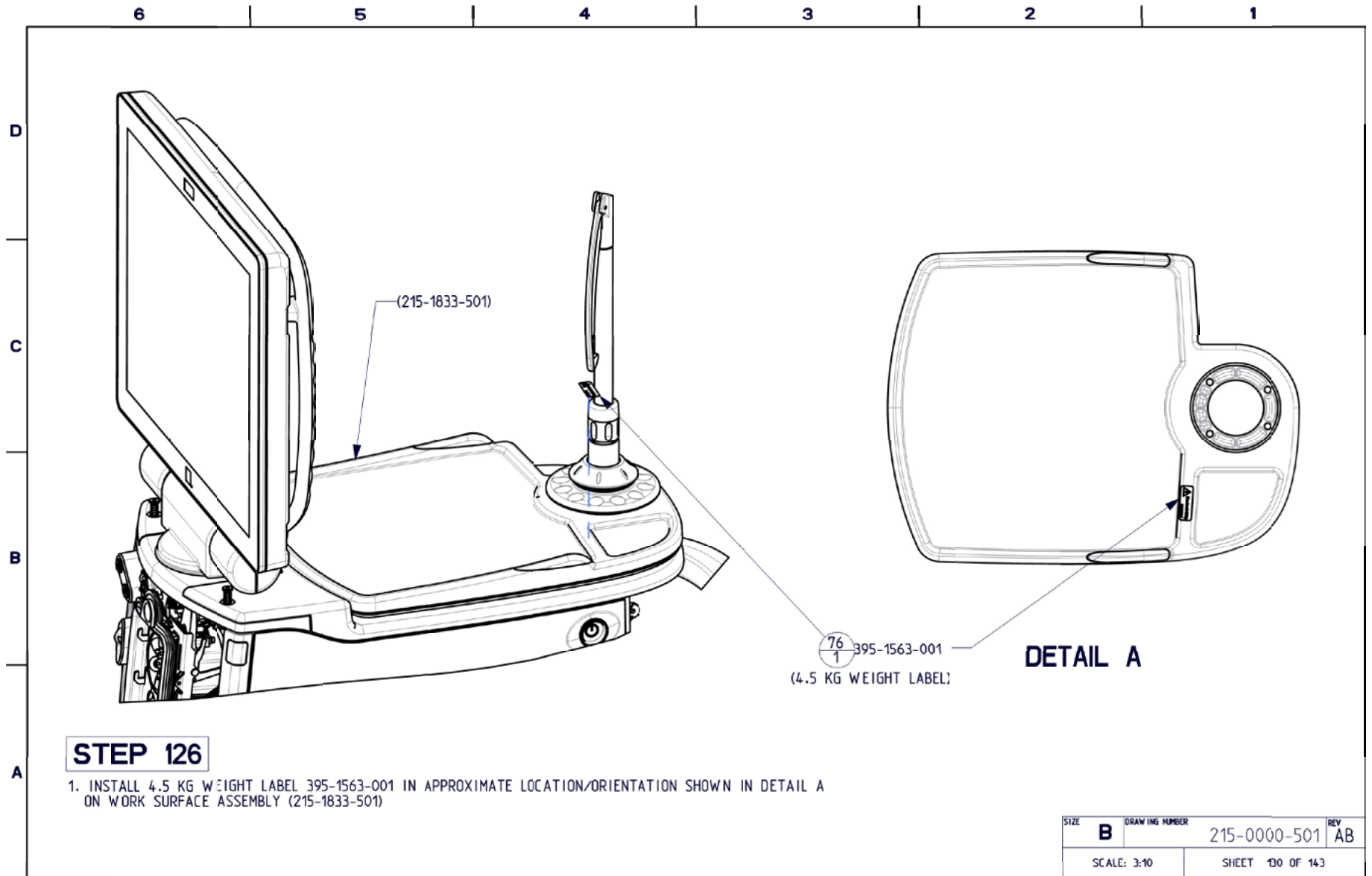


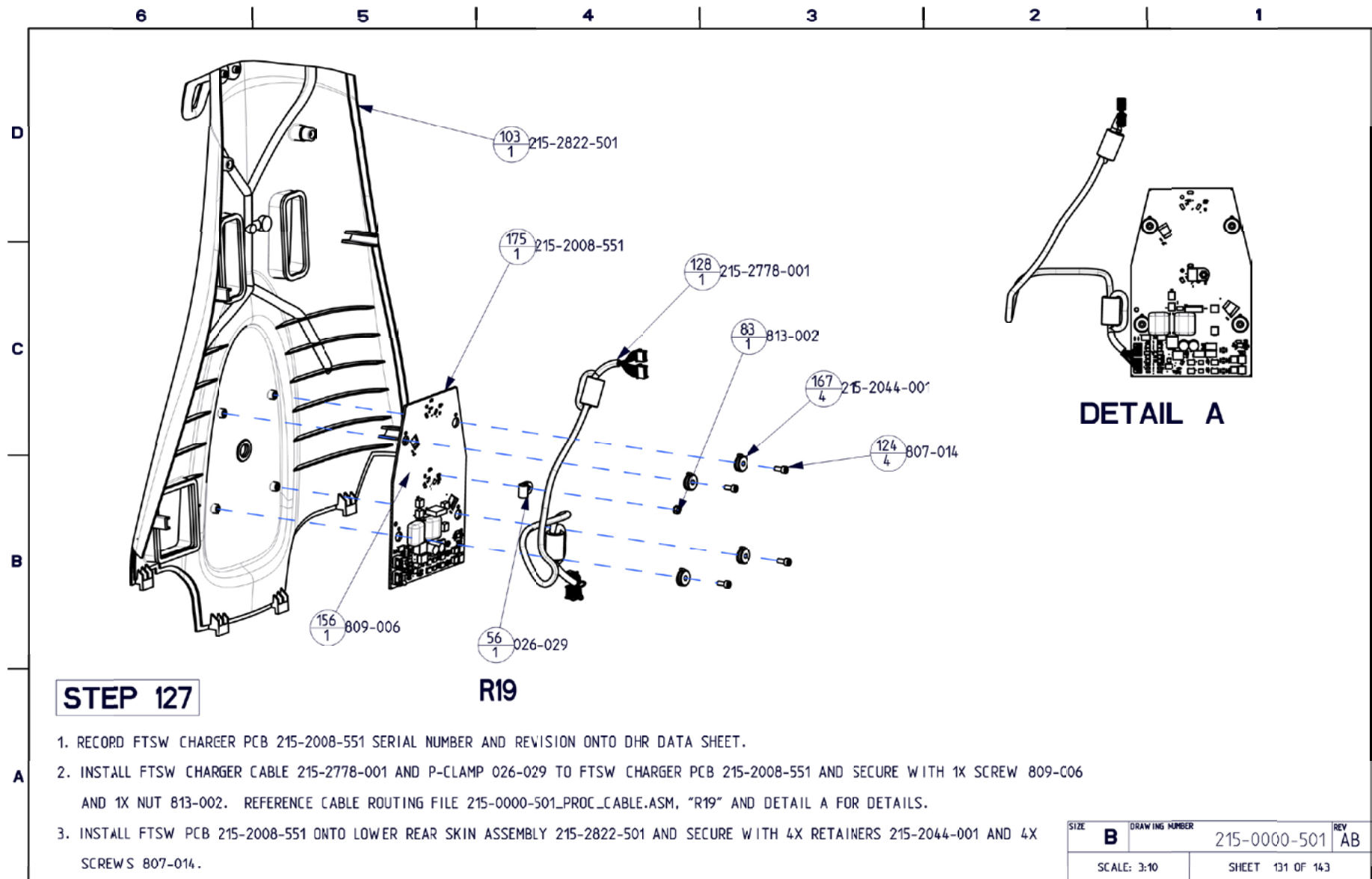


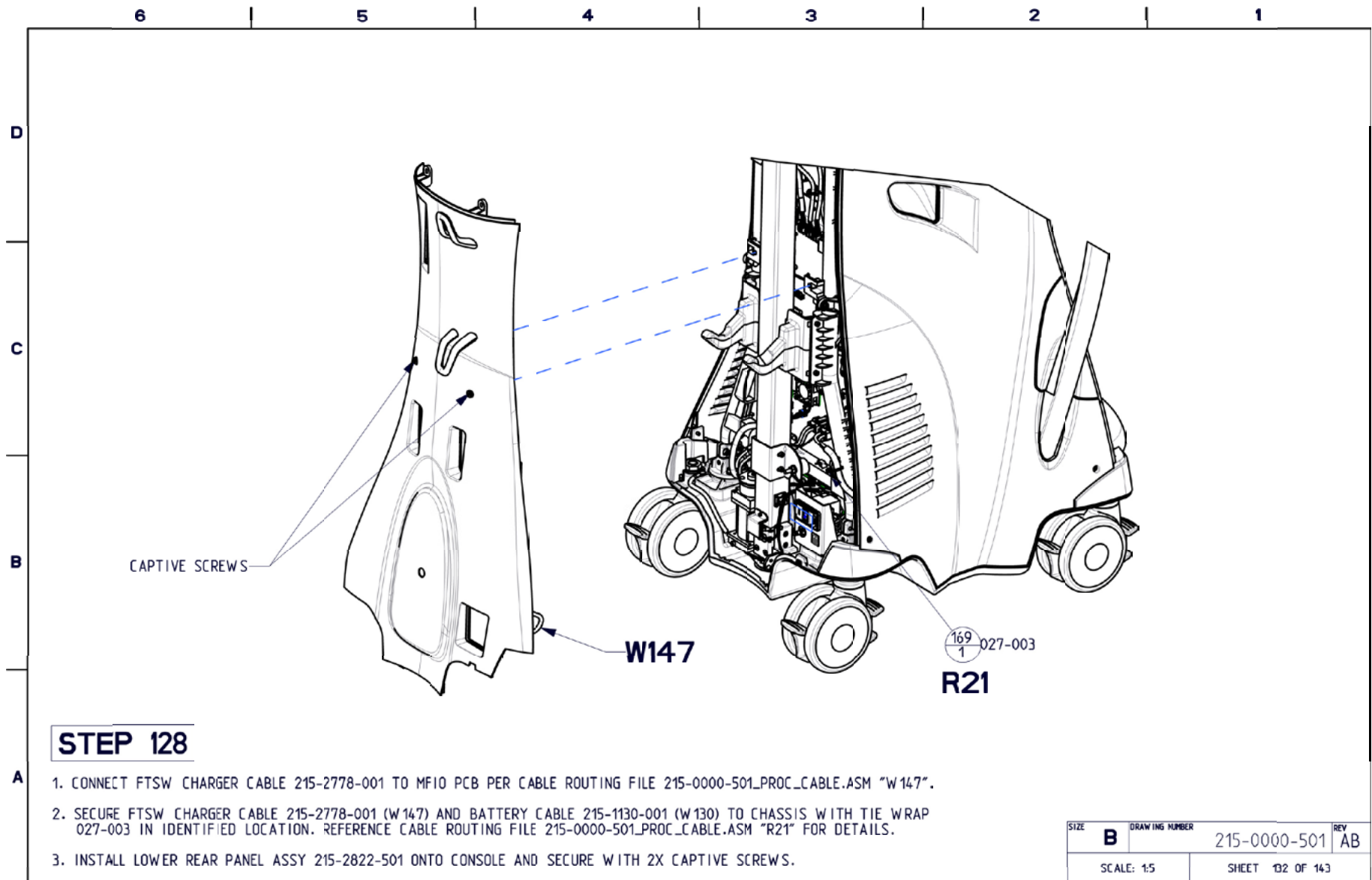


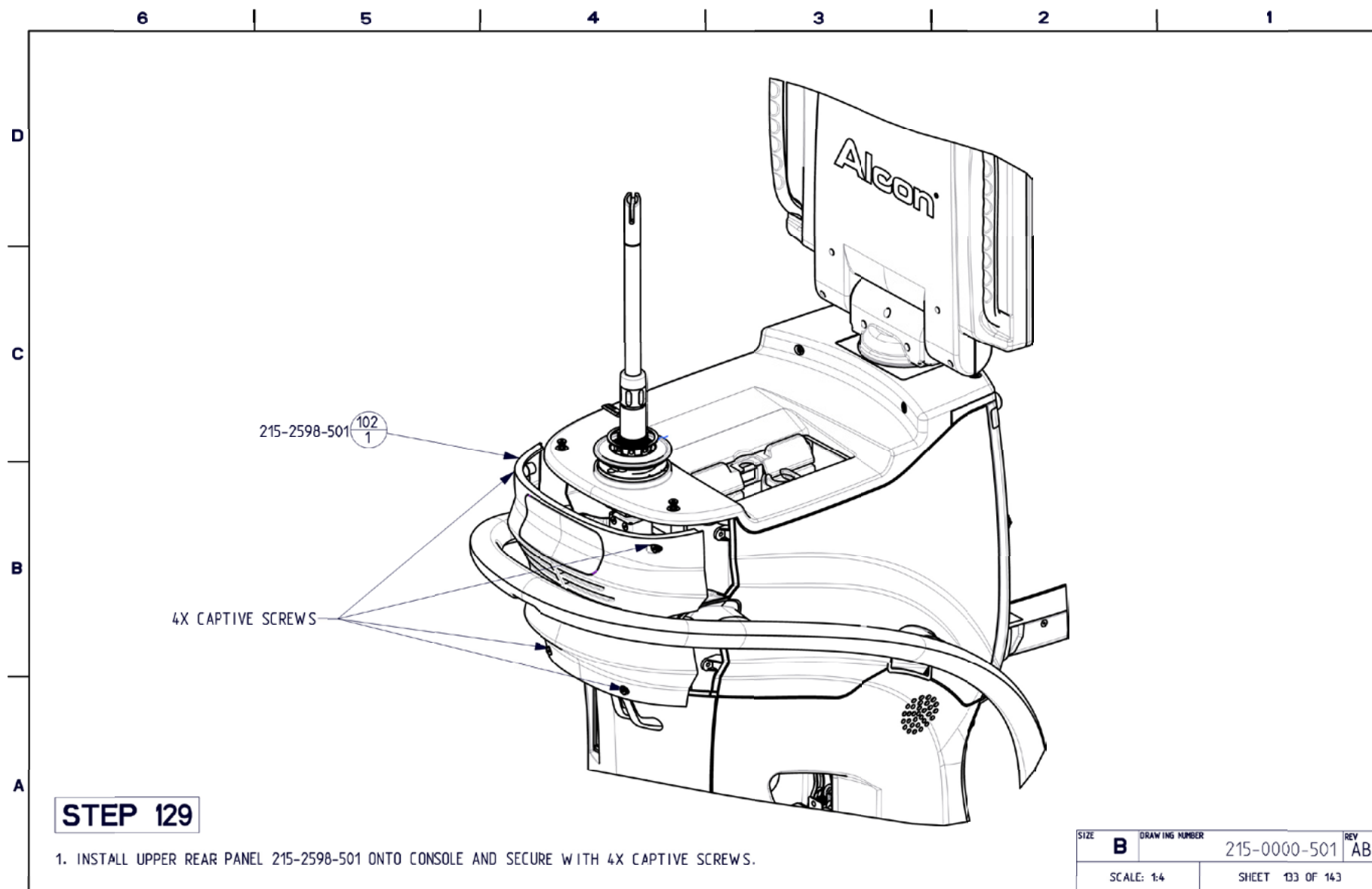


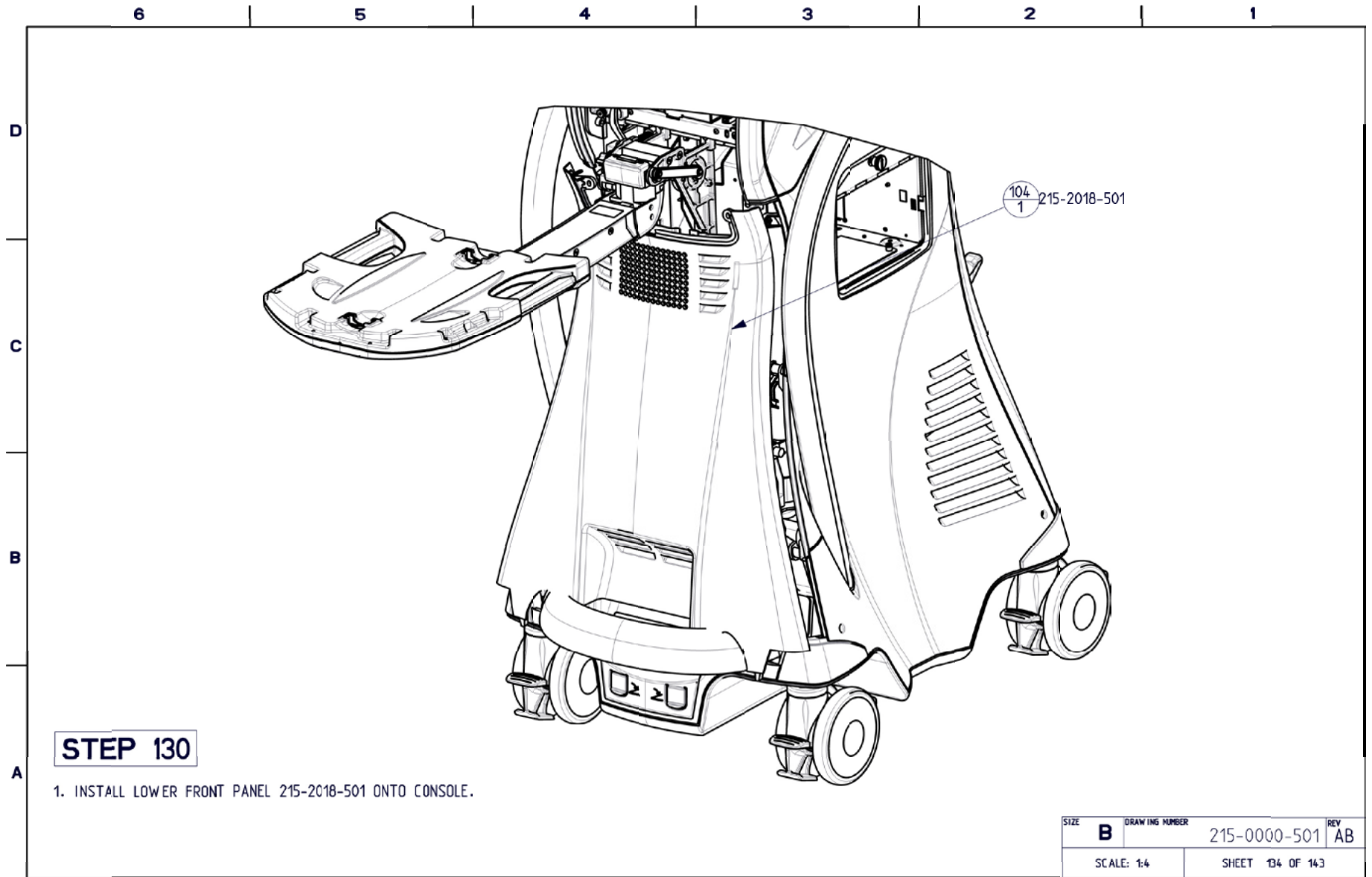


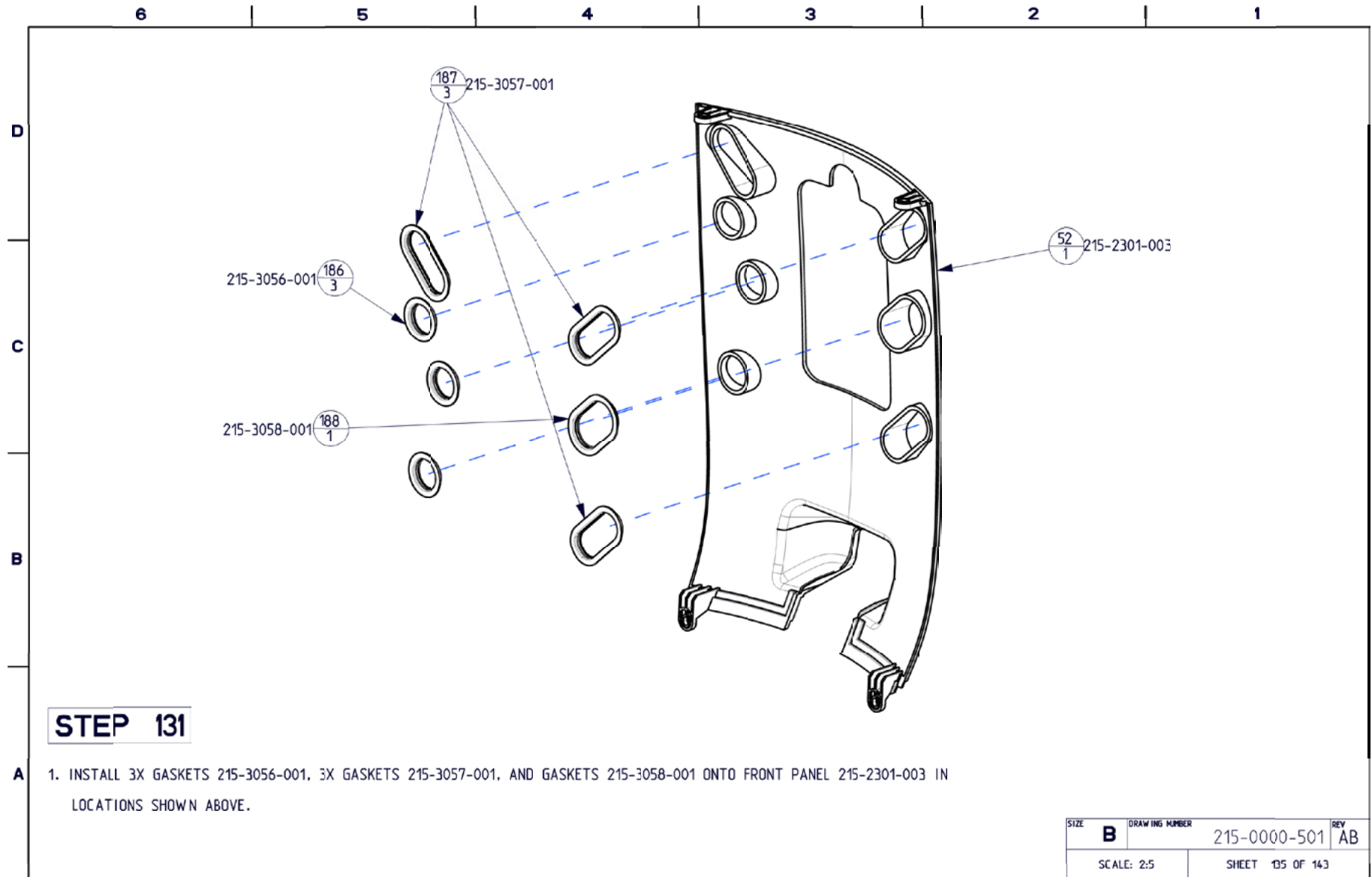












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TRAY ARM ASSY (215-1091-502) HAS BEEN HIDDEN FOR CLARIFICATION.

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A

FRONT CAPTIVE SCREWS OF 215-1837-501

(215-2301-003)

CAPTIVE SCREWS

215-3111-501

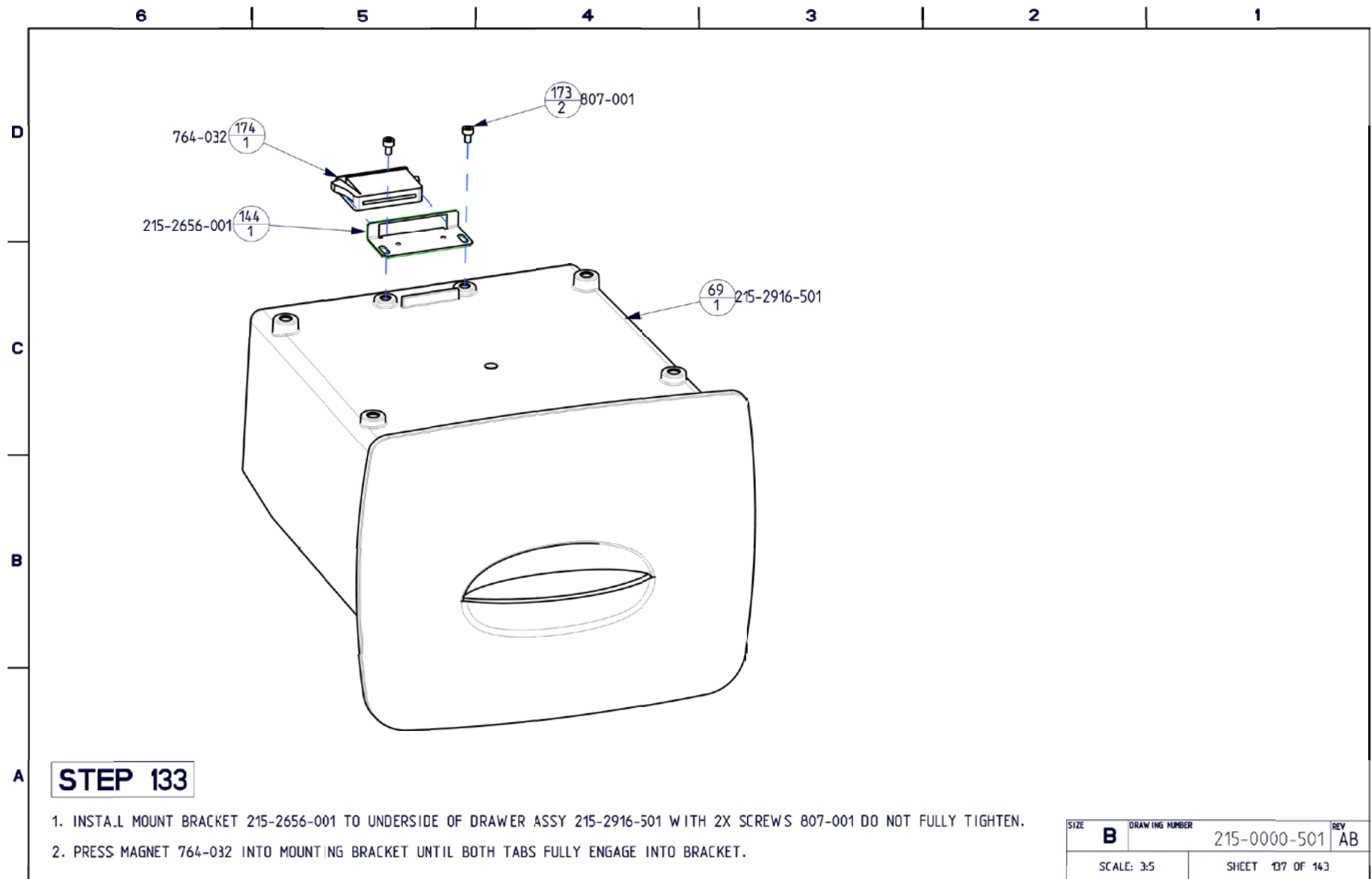
44
1

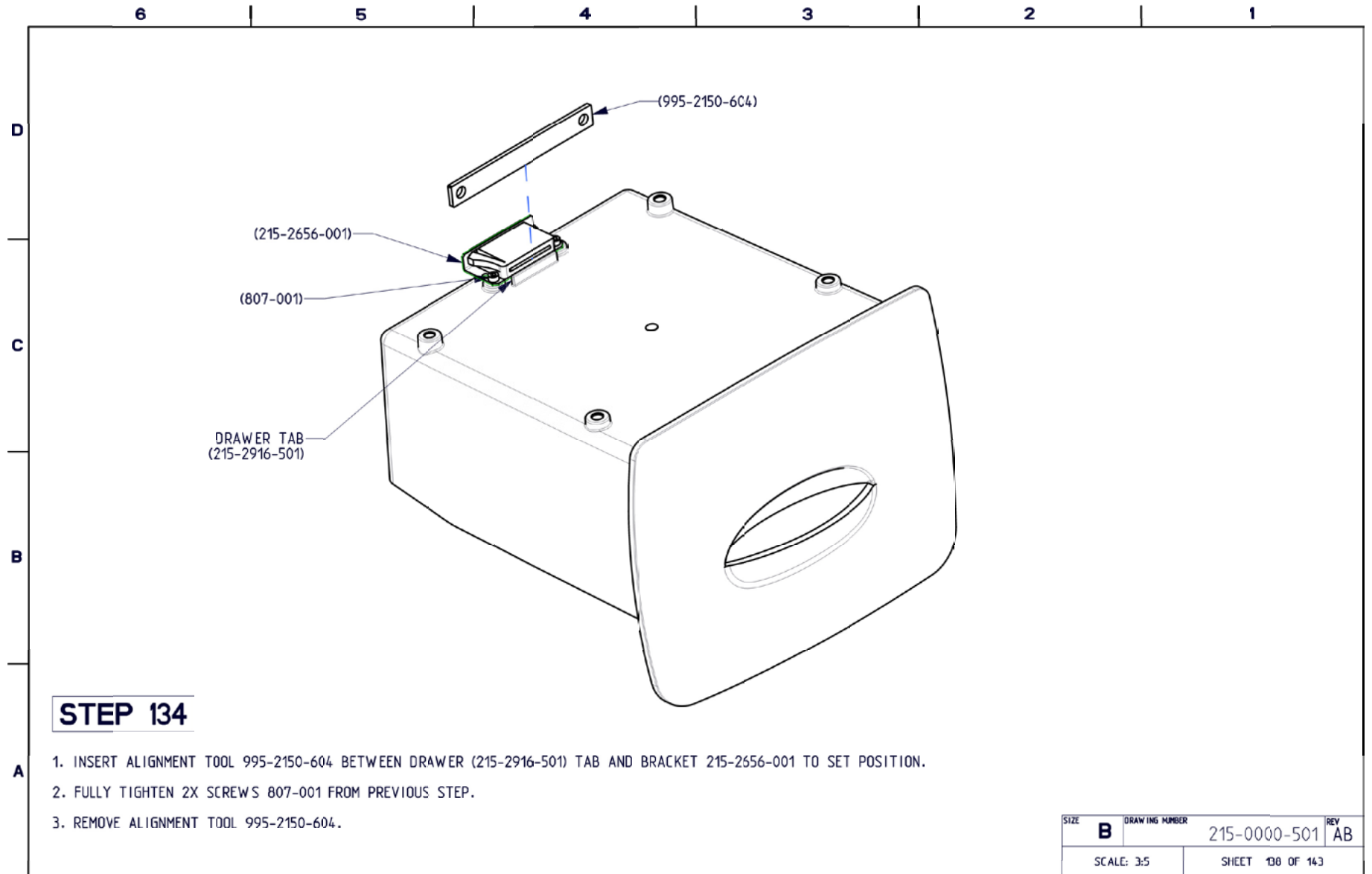
(215-2018-501)

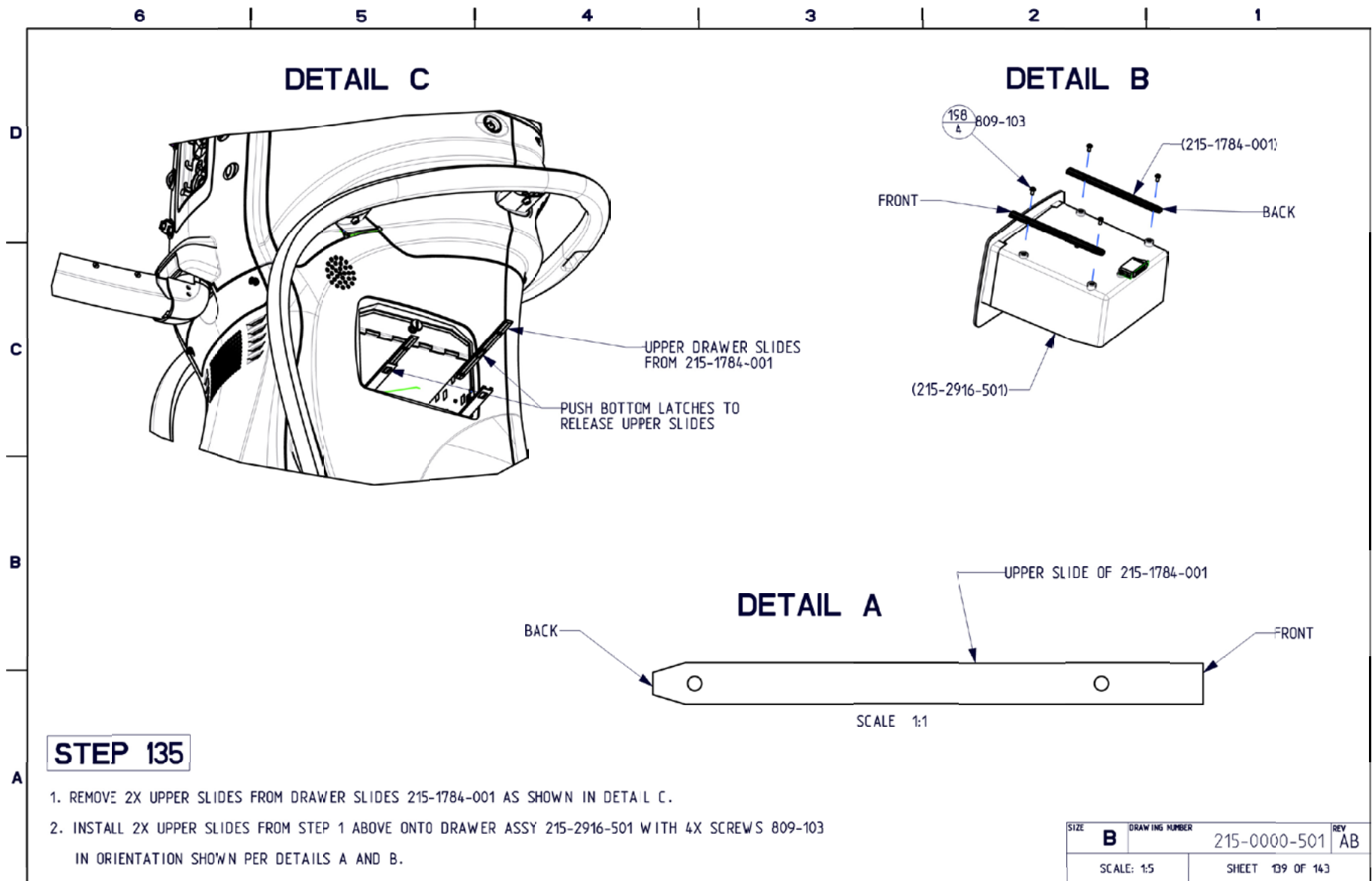
STEP 132

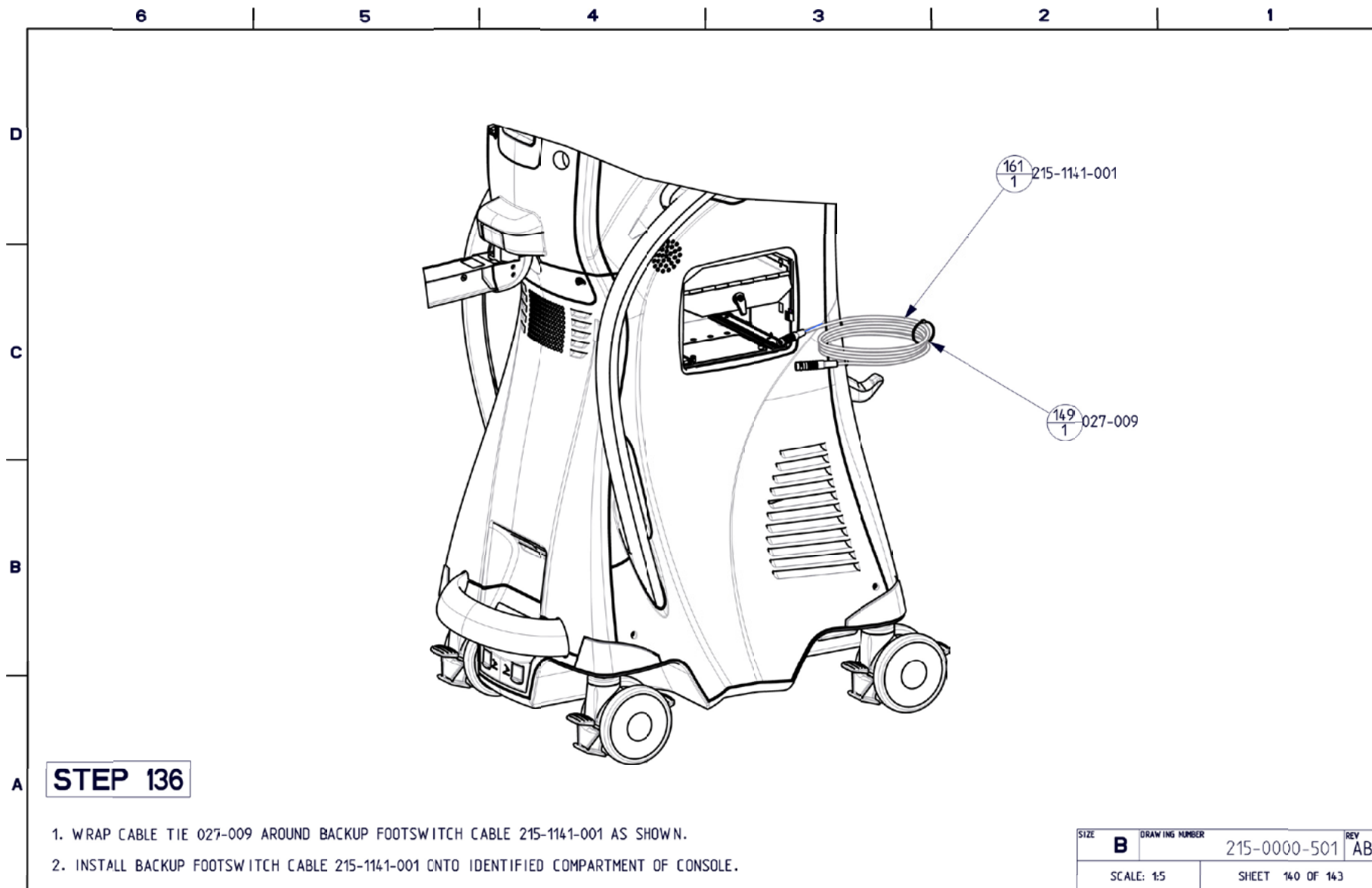
1. INSTALL UPPER FRONT PANEL 215-2301-003 ONTO CONSOLE.
2. INSTALL FRONT VENT PANEL 215-3111-501 ONTO CONSOLE AND SECURE PANELS 215-2301-003, 215-3111-501 AND 215-2018-501 TO CONSOLE WITH 2X CAPTIVE SCREWS.
3. SECURE DISPLAY INSERT ASSY 215-1837-501 TO CONSOLE BY TIGHTENING 2X FRONT CAPTIVE SCREWS.

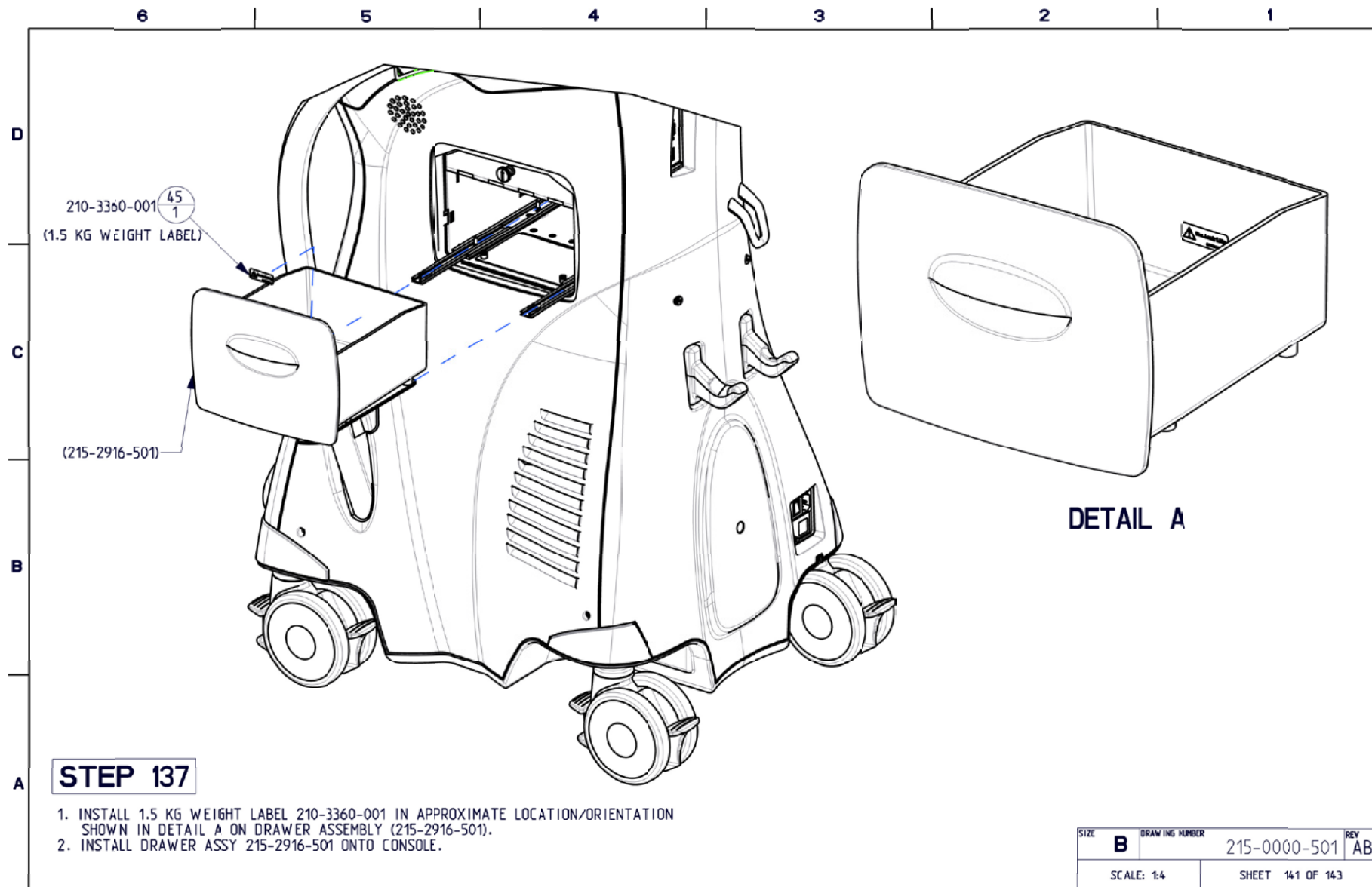
SIZE	DRAWING NUMBER	REV
B	215-0000-501	AB
SCALE: 1:4		SHEET 136 OF 143











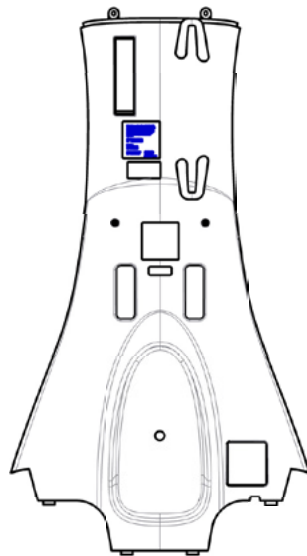
6 5 4 3 2 1

D

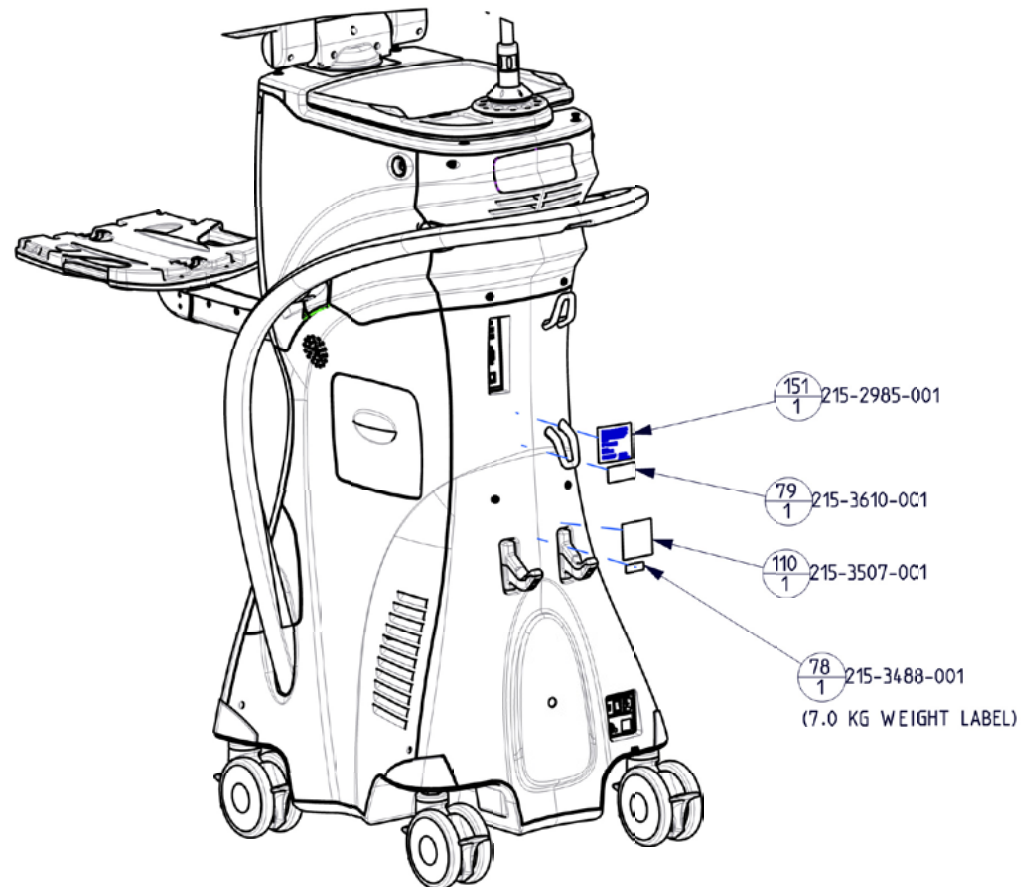
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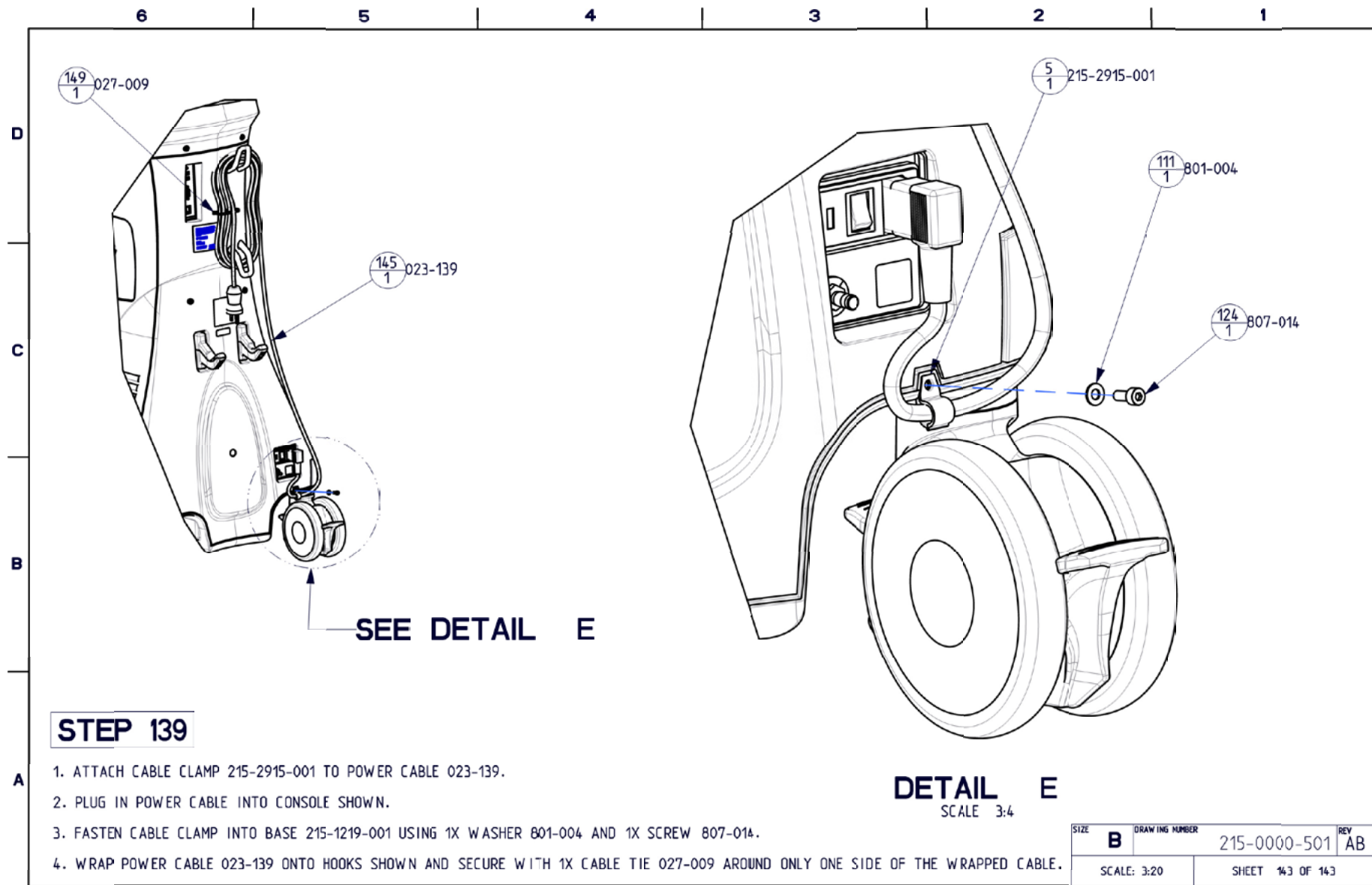
DETAIL A

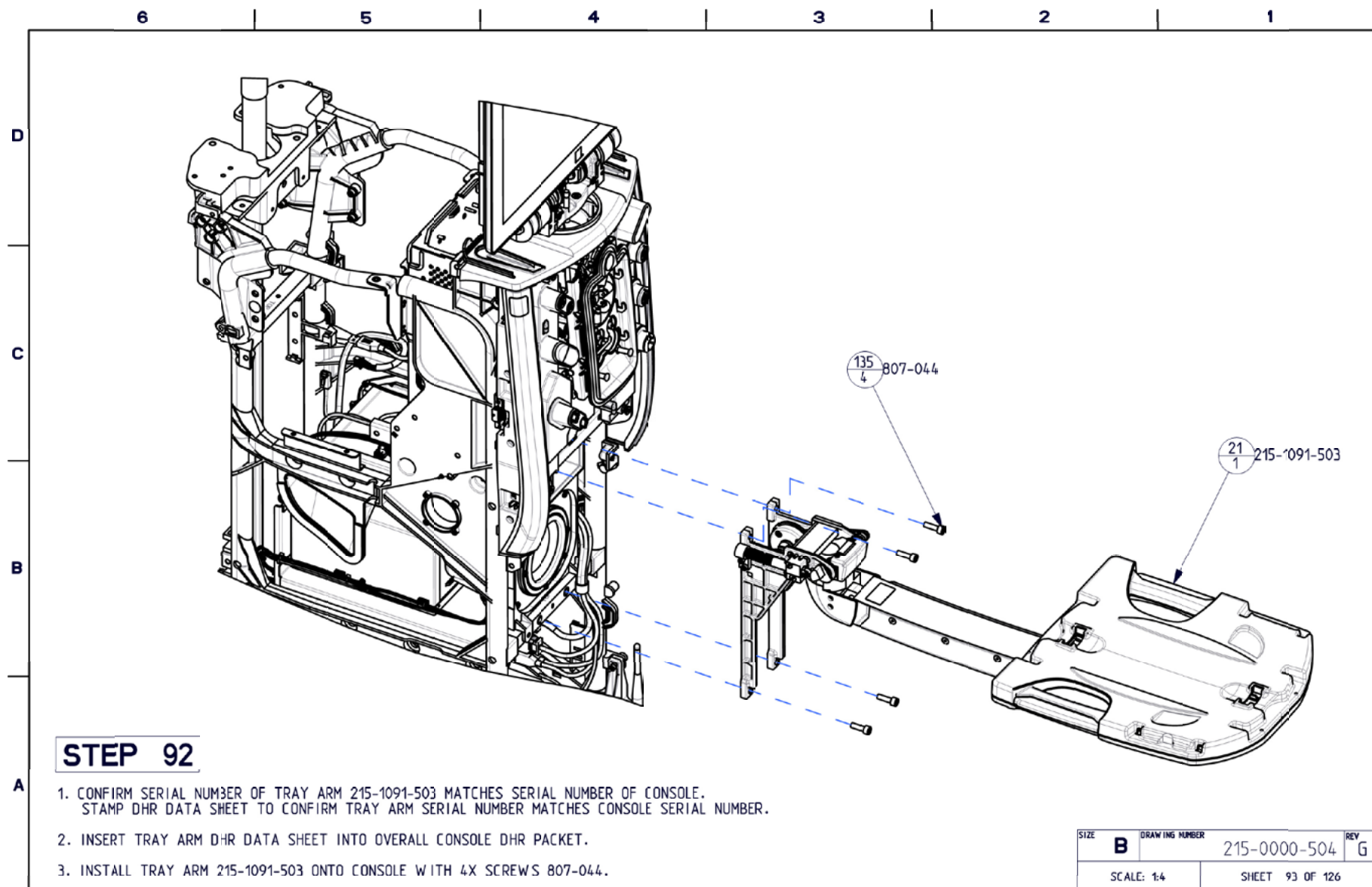


STEP 138

1. INSTALL CENTURION WIRELESS LABEL 215-2985-001 ONTO LOWER REAR PANEL IN LOCATION SHOWN.
2. INSTALL REAR PANEL INFO LABEL 215-3507-001 ONTO LOWER REAR PANEL IN LOCATION SHOWN.
3. INSTALL 7.0 KG WEIGHT LABEL 215-3488-001 IN APPROXIMATE LOCATION/ORIENTATION SHOWN IN DETAIL A ON LOWER REAR PANEL.
4. INSTALL IMPORTER LABEL 215-3610-001 ONTO LOWER REAR PANEL IN LOCATION SHOWN.

SIZE	B	DRAWING NUMBER	215-0000-501	REV	AB
SCALE: 3:20		SHEET 142 OF 143			





NOTE: Only sheets 93-126 are included in this manual as reference for installing the tray arm assembly, IV pole assembly, and the outer panels of the Silver system. For other system components refer to drawing 215-0000-501 (excludes the AI module and any other components noted in Section Three).



215-3525-001(18/1)

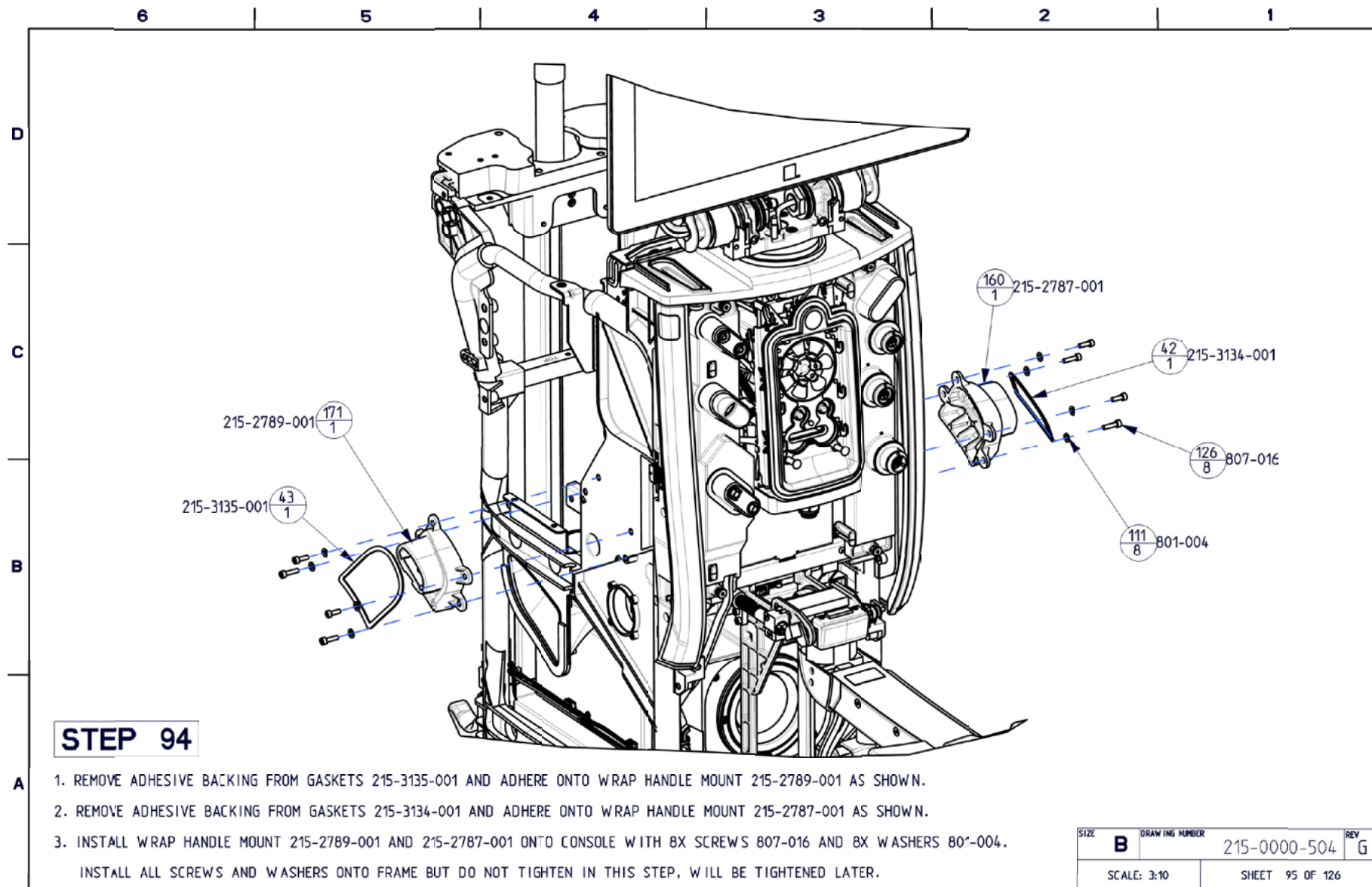
C

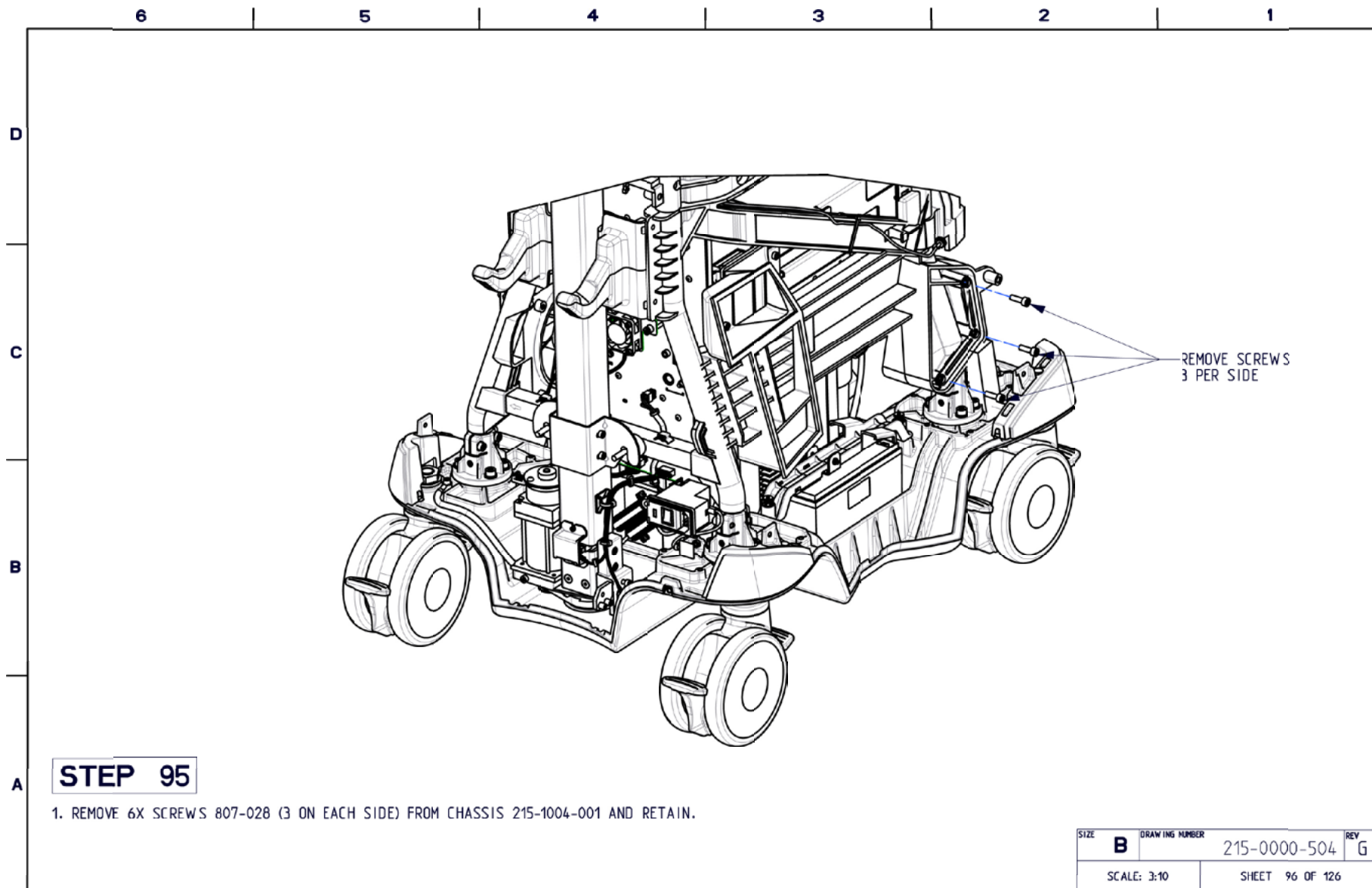
B

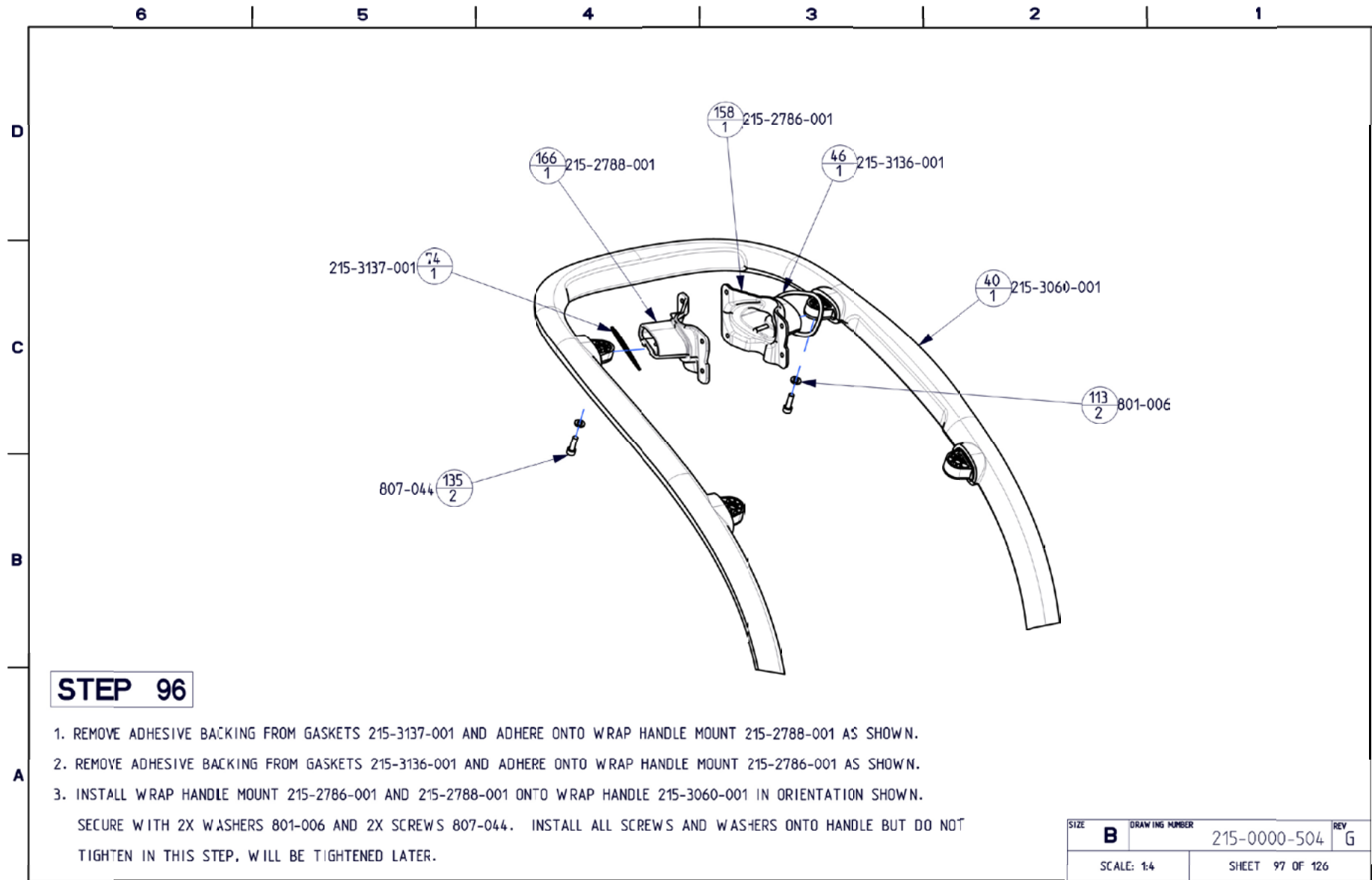
A

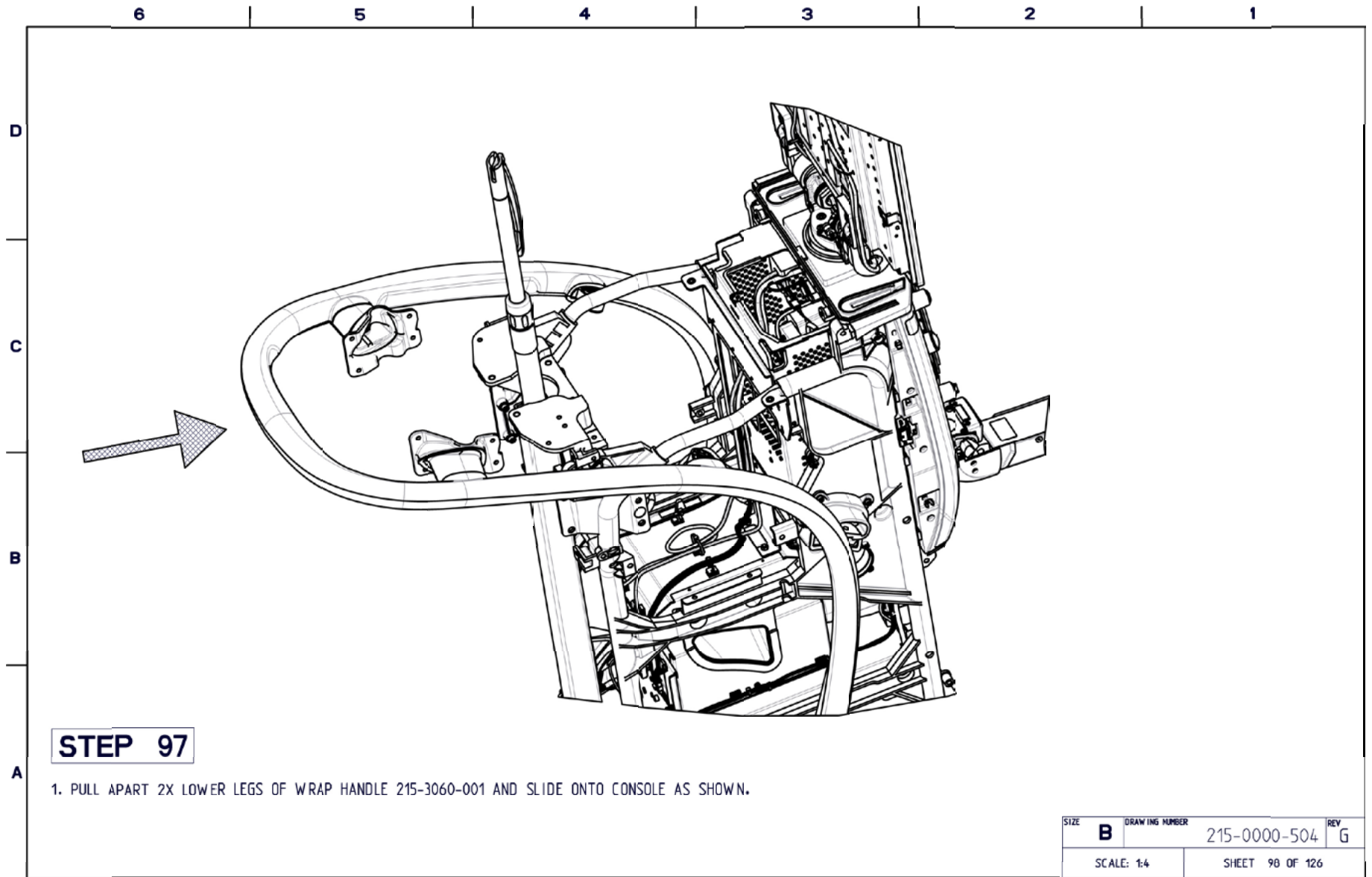
1. ASSEMBLE THREADED SLEEVE MOUNT 215-3525-001 WITH 2X SCREWS 807-041.

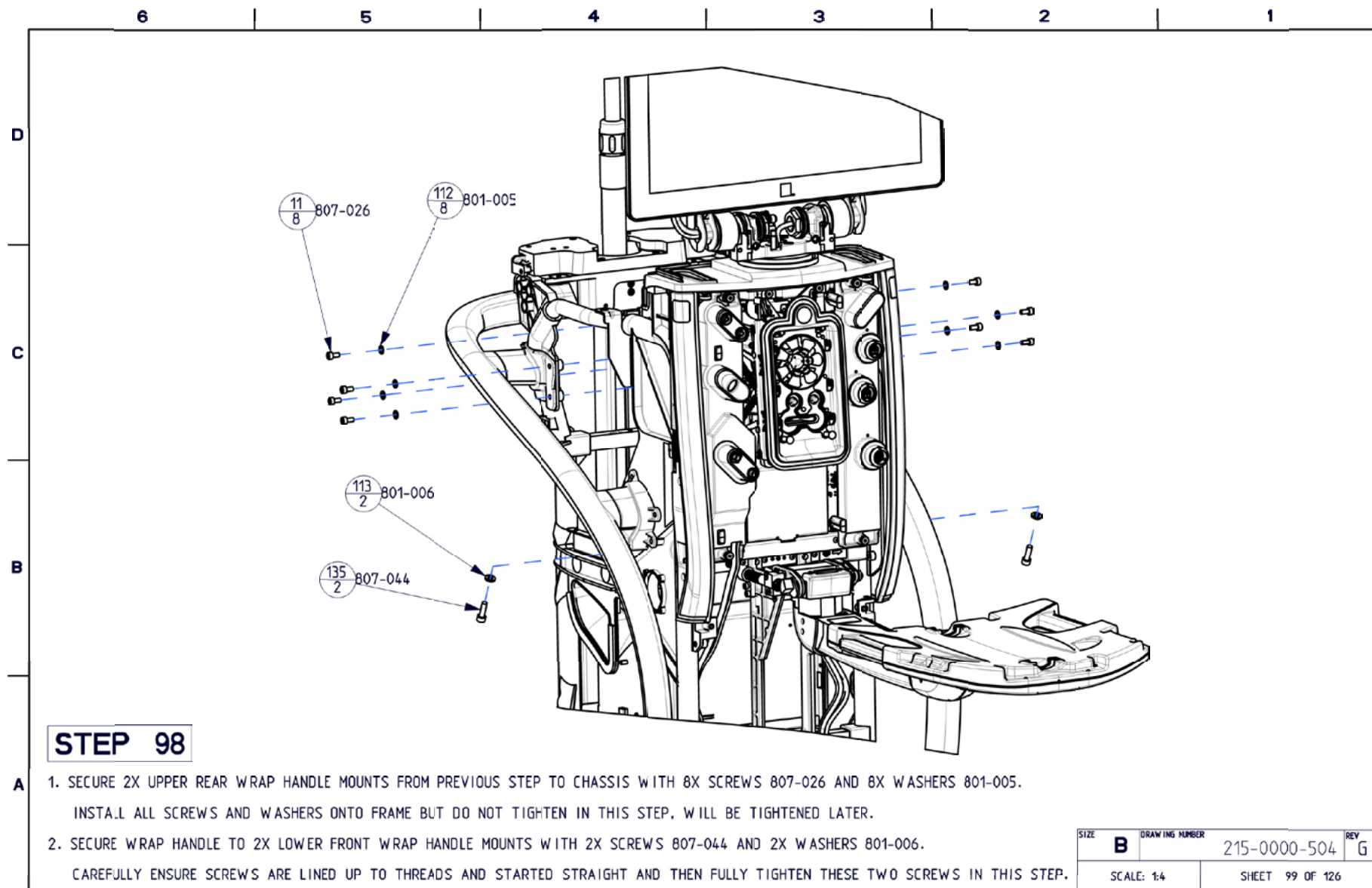
906-2150-002

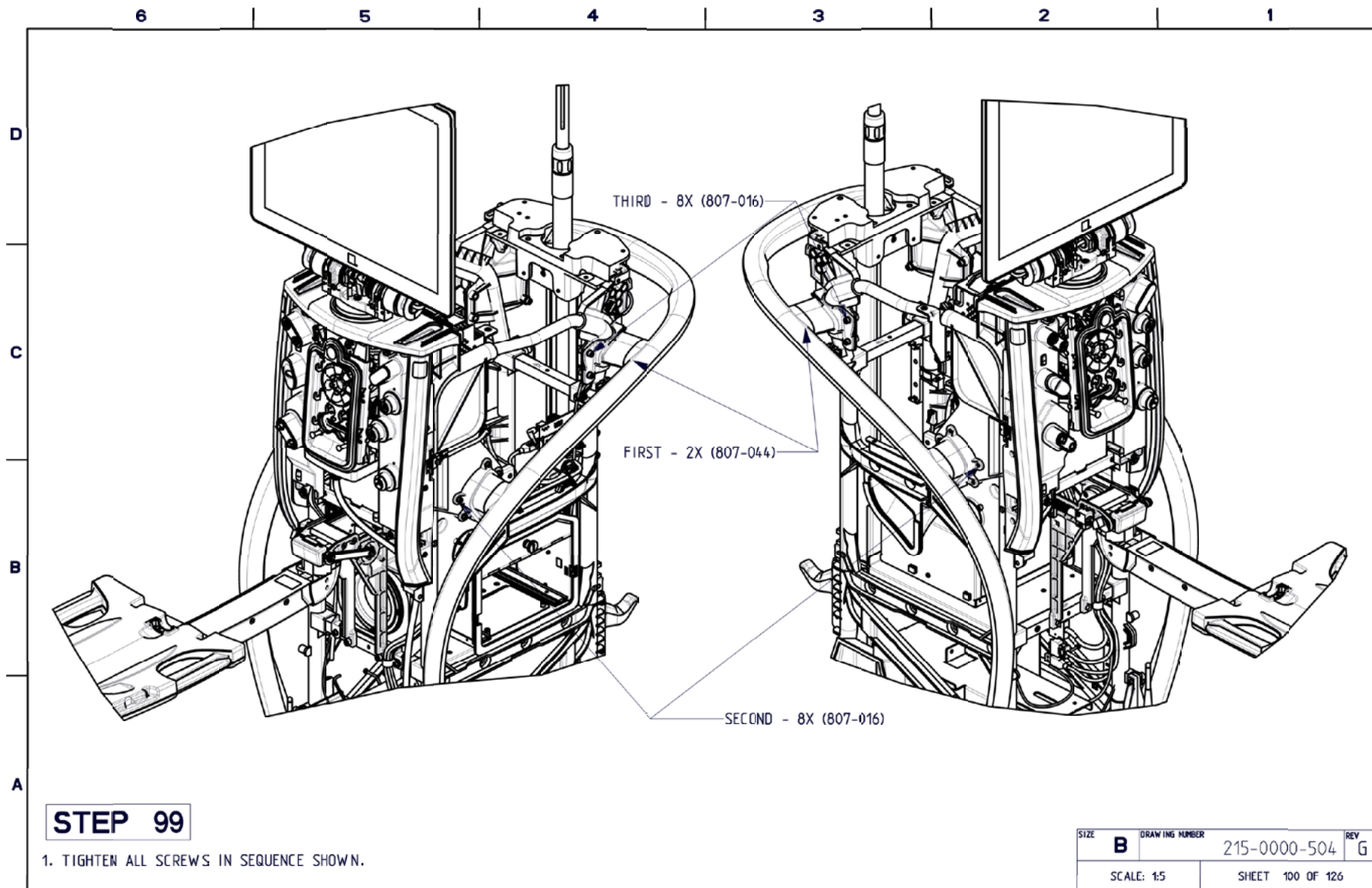








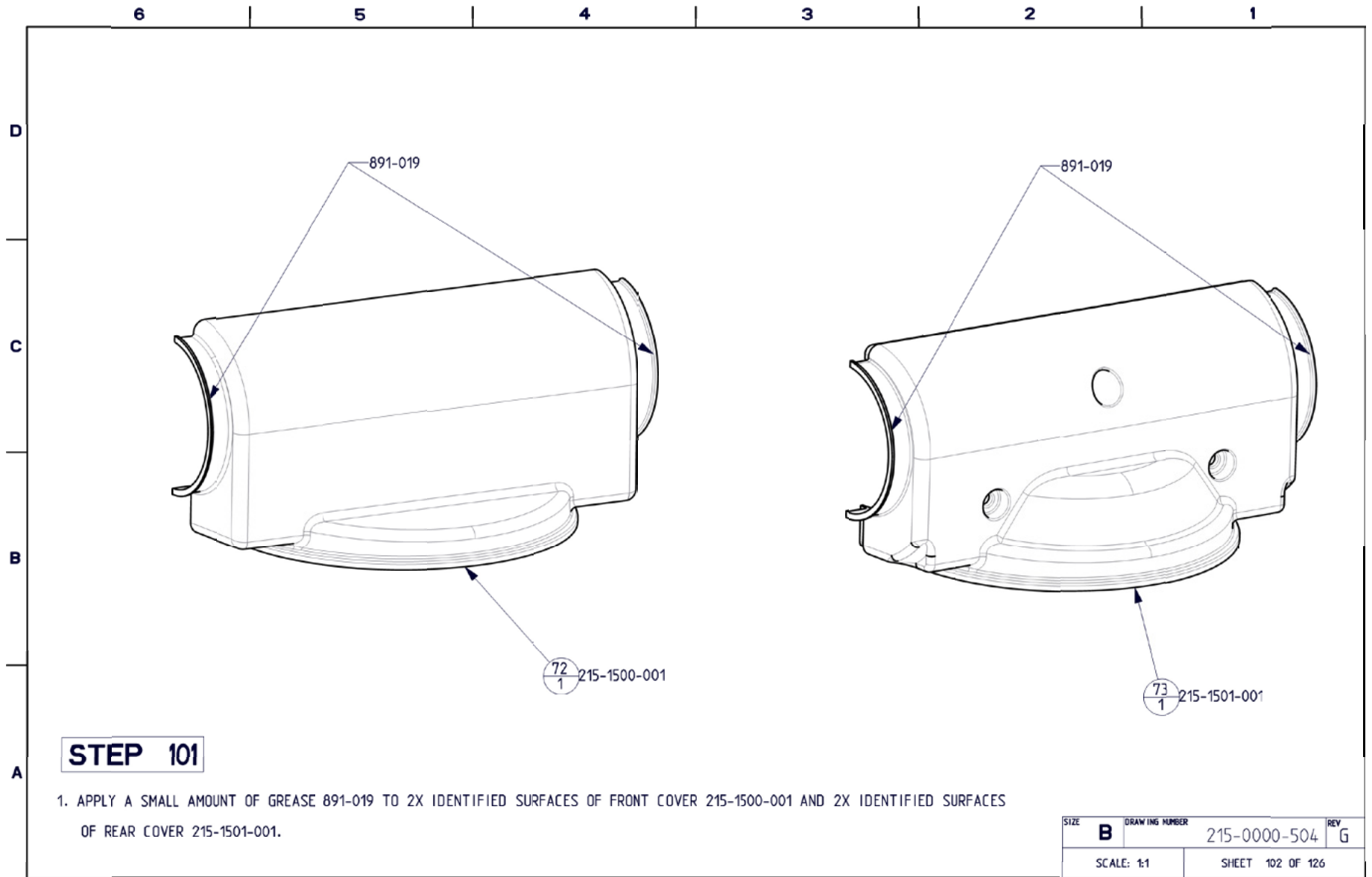


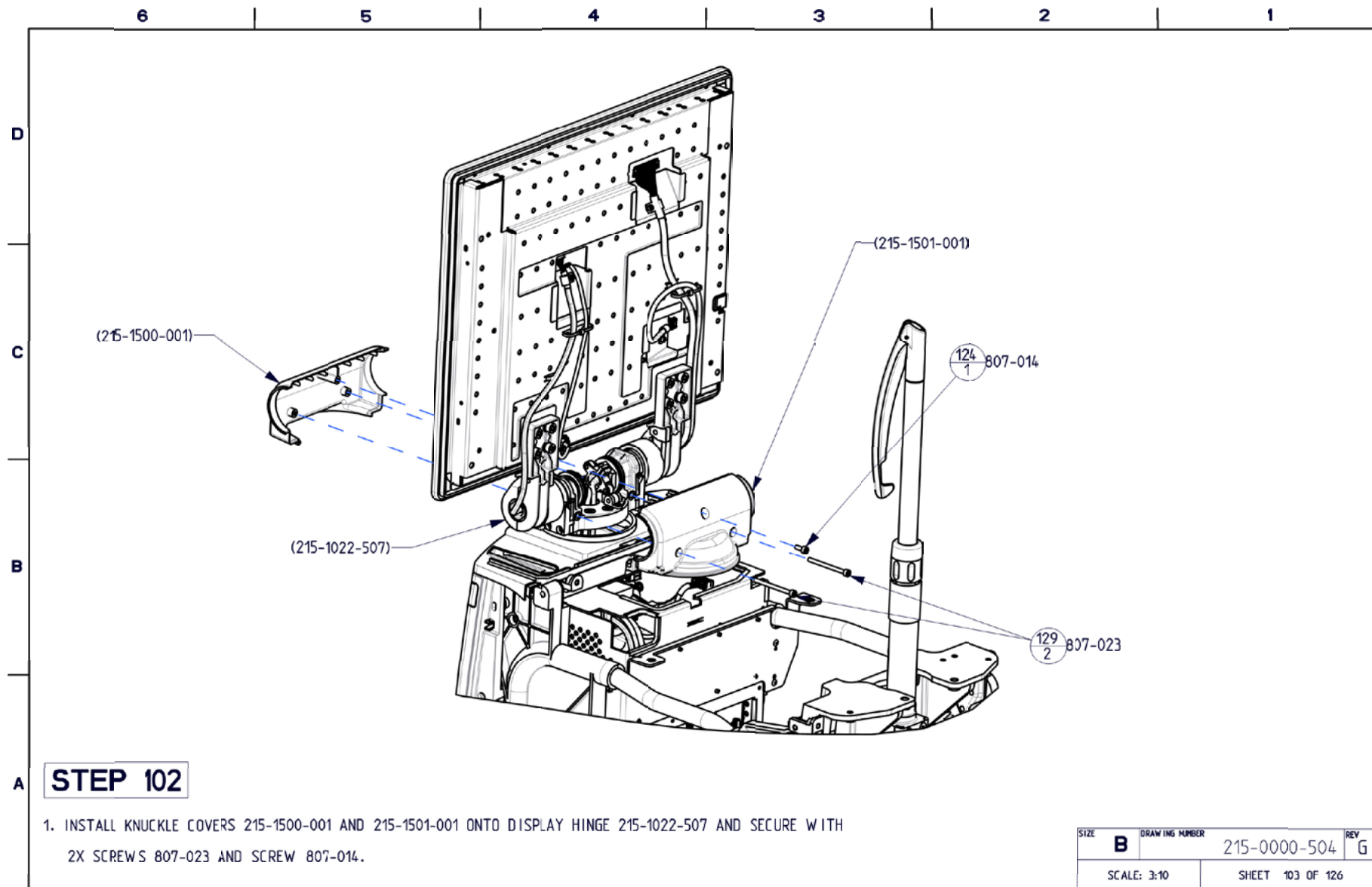


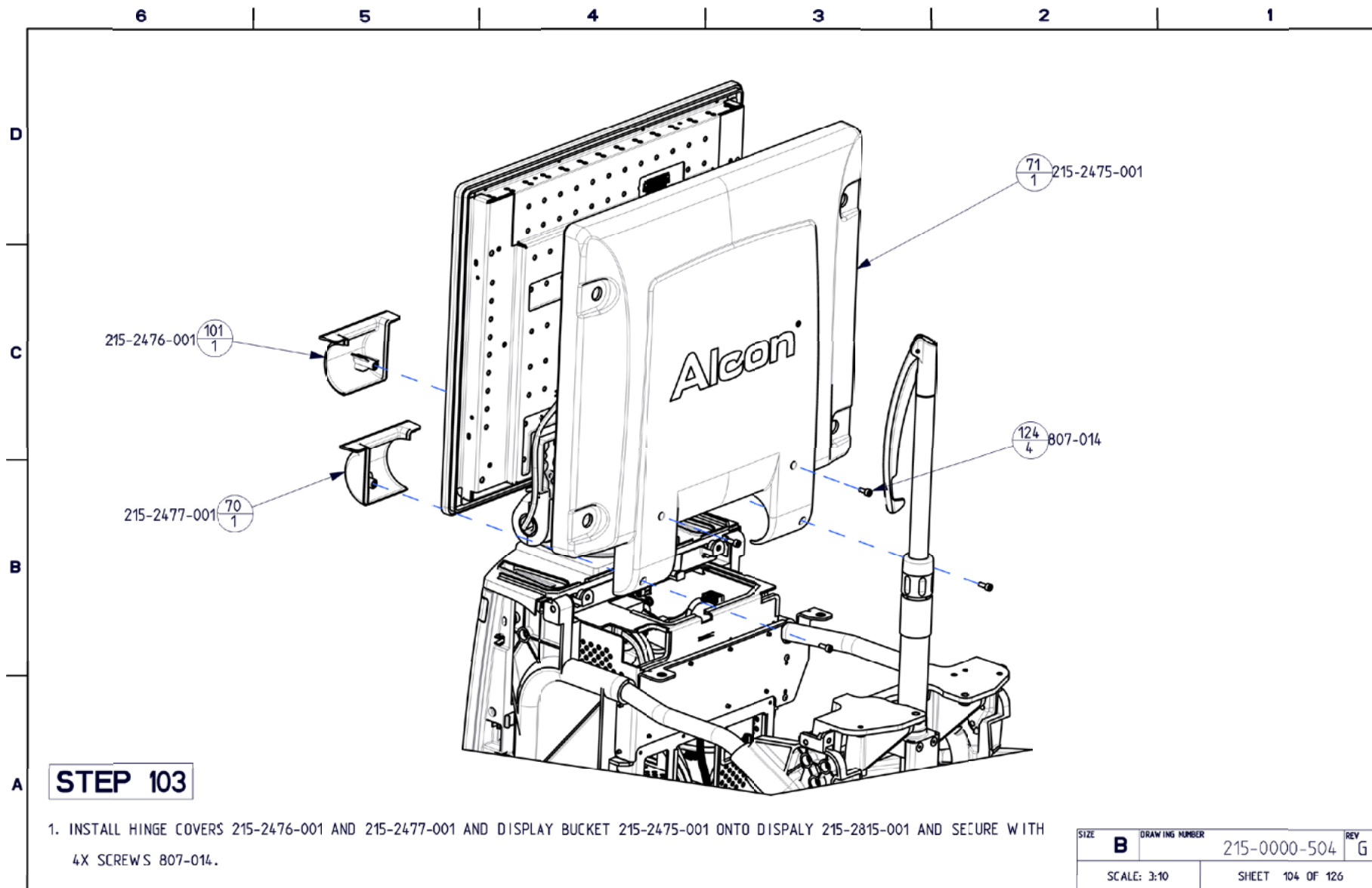


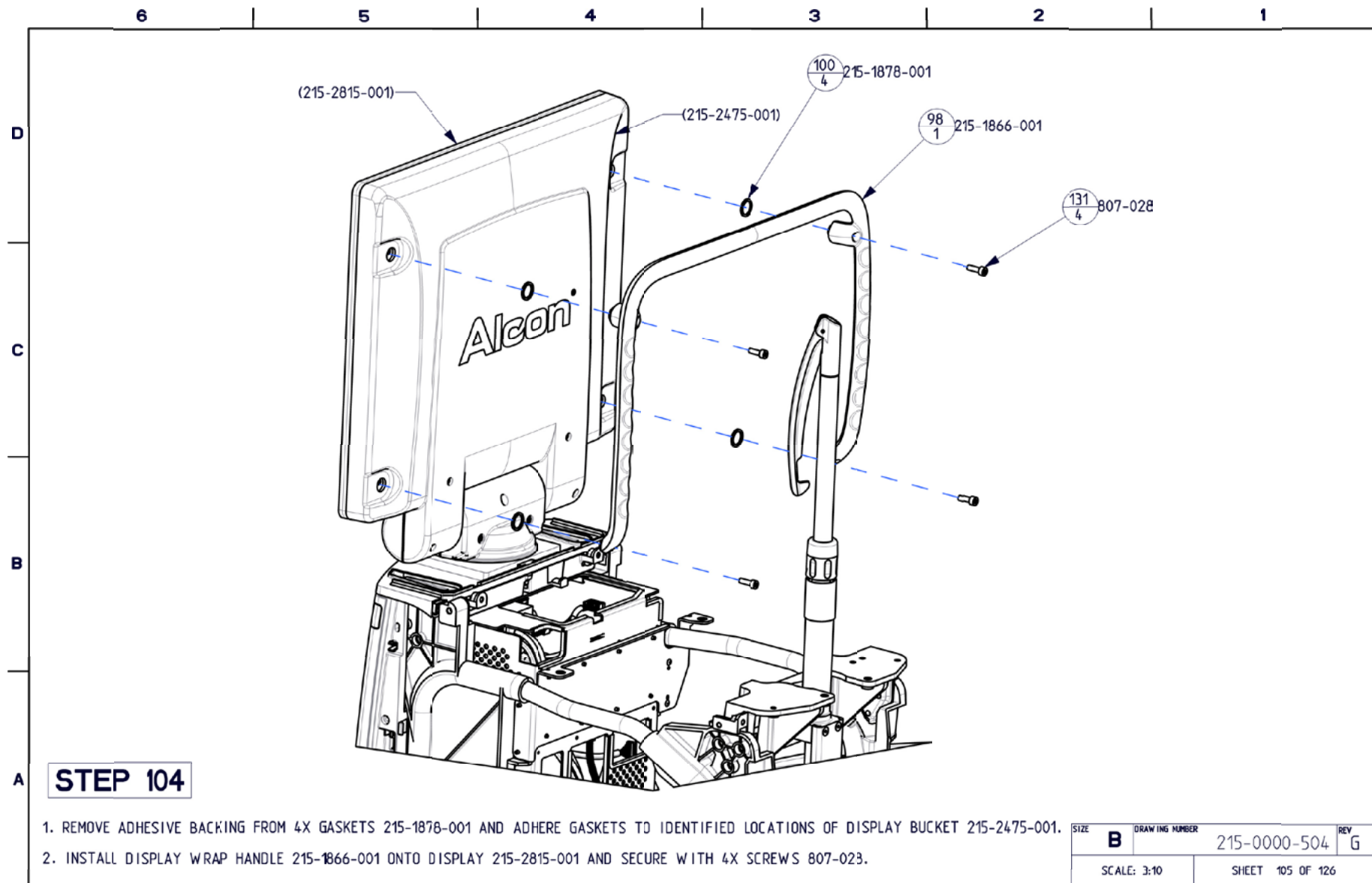
FULLY TIGHTEN THESE SCREWS IN THIS STEP.

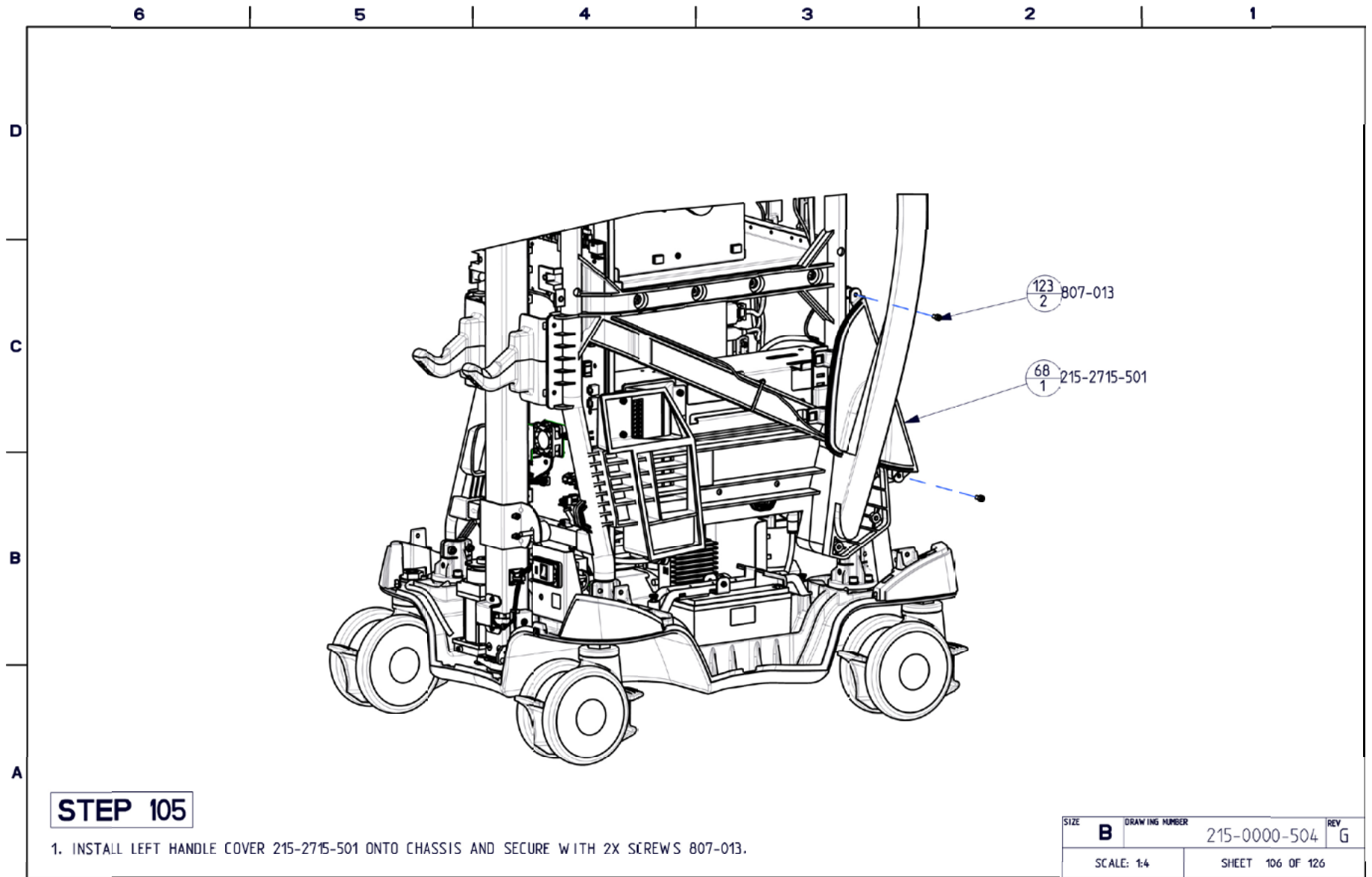
6.153

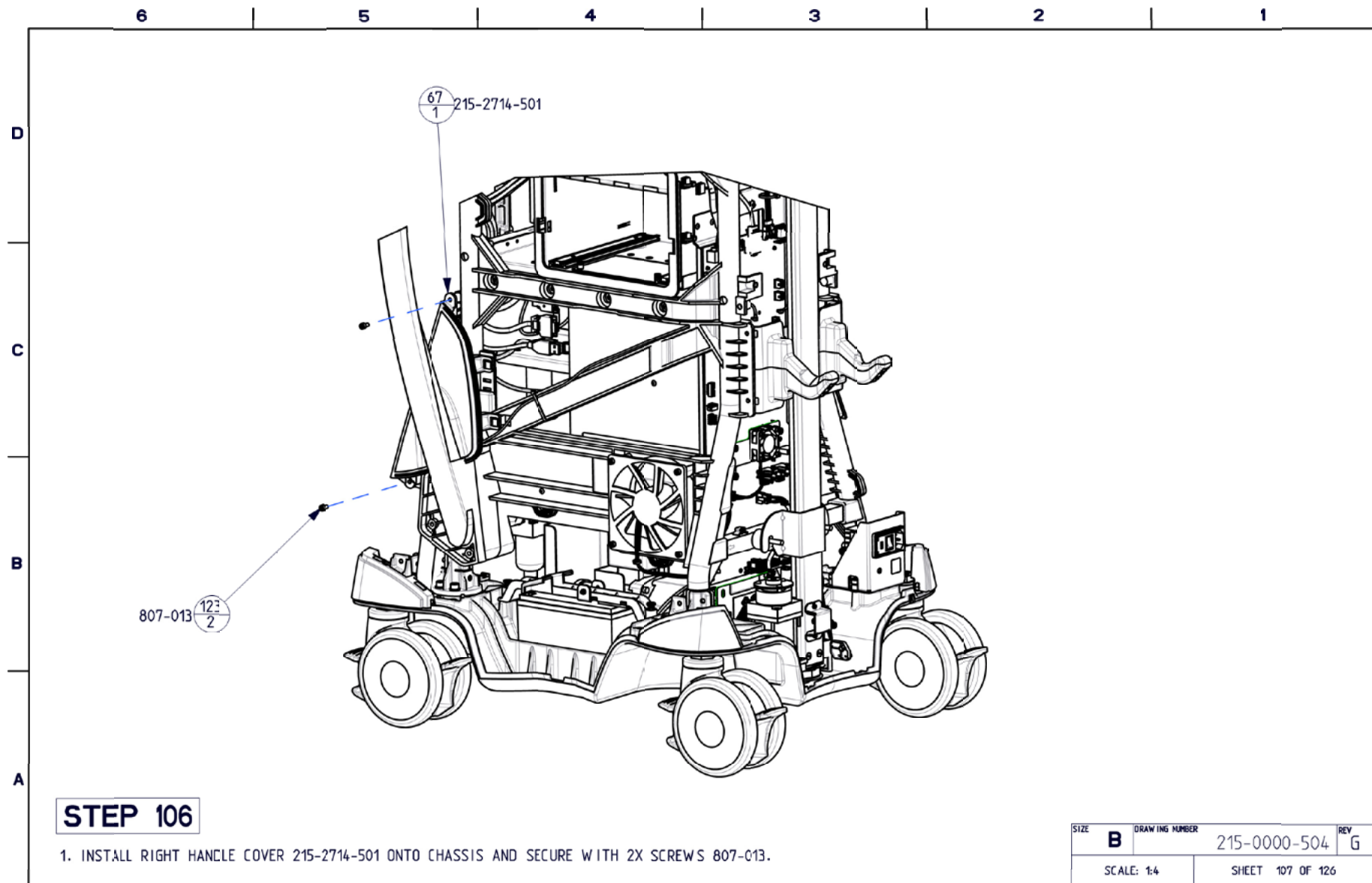












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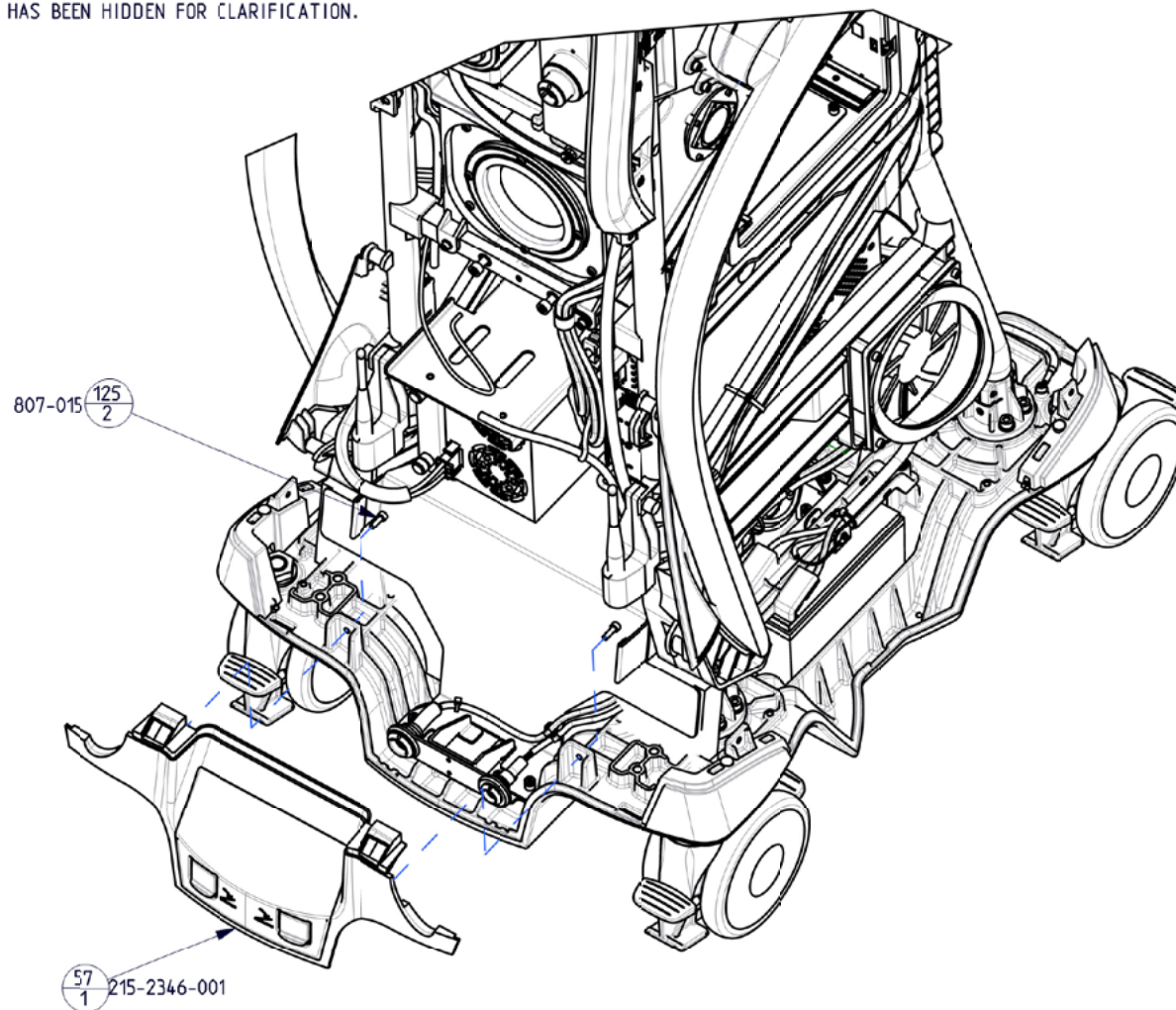
TRAY ARM ASSY (215-1091-502) HAS BEEN HIDDEN FOR CLARIFICATION.

D

C

B

A



STEP 107

1. INSTALL FRONT FOOT HANDLE PANEL 215-2346-001 ONTO BASE 215-1219-001 AND SECURE WITH 2X SCREWS 807-015.

SIZE	B	DRAWING NUMBER	215-0000-504	REV	G
SCALE: 3:10		SHEET 108 OF 126			

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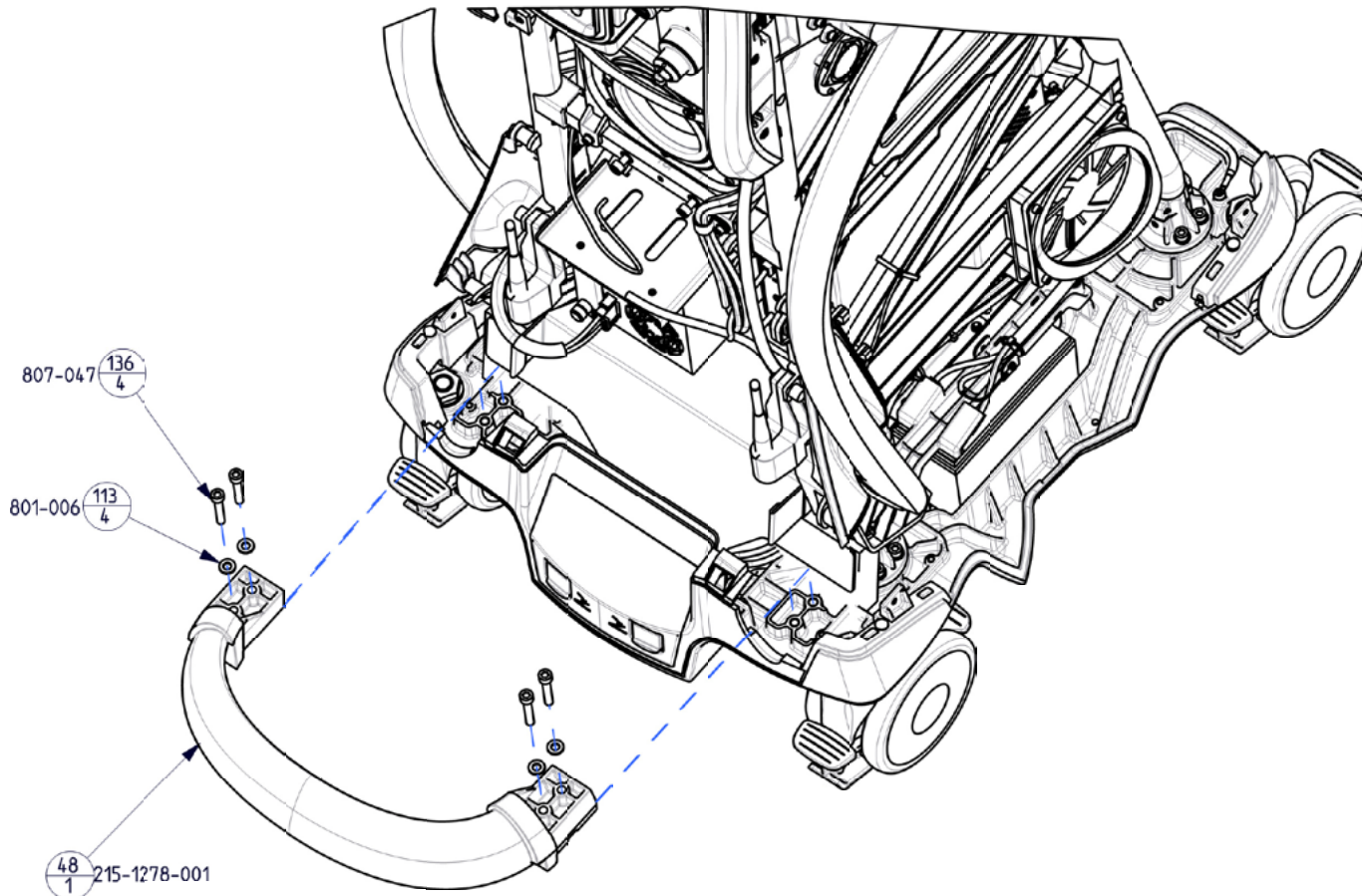
TRAY ARM ASSY (215-109*-502) HAS BEEN HIDDEN FOR CLARIFICATION.

D

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B

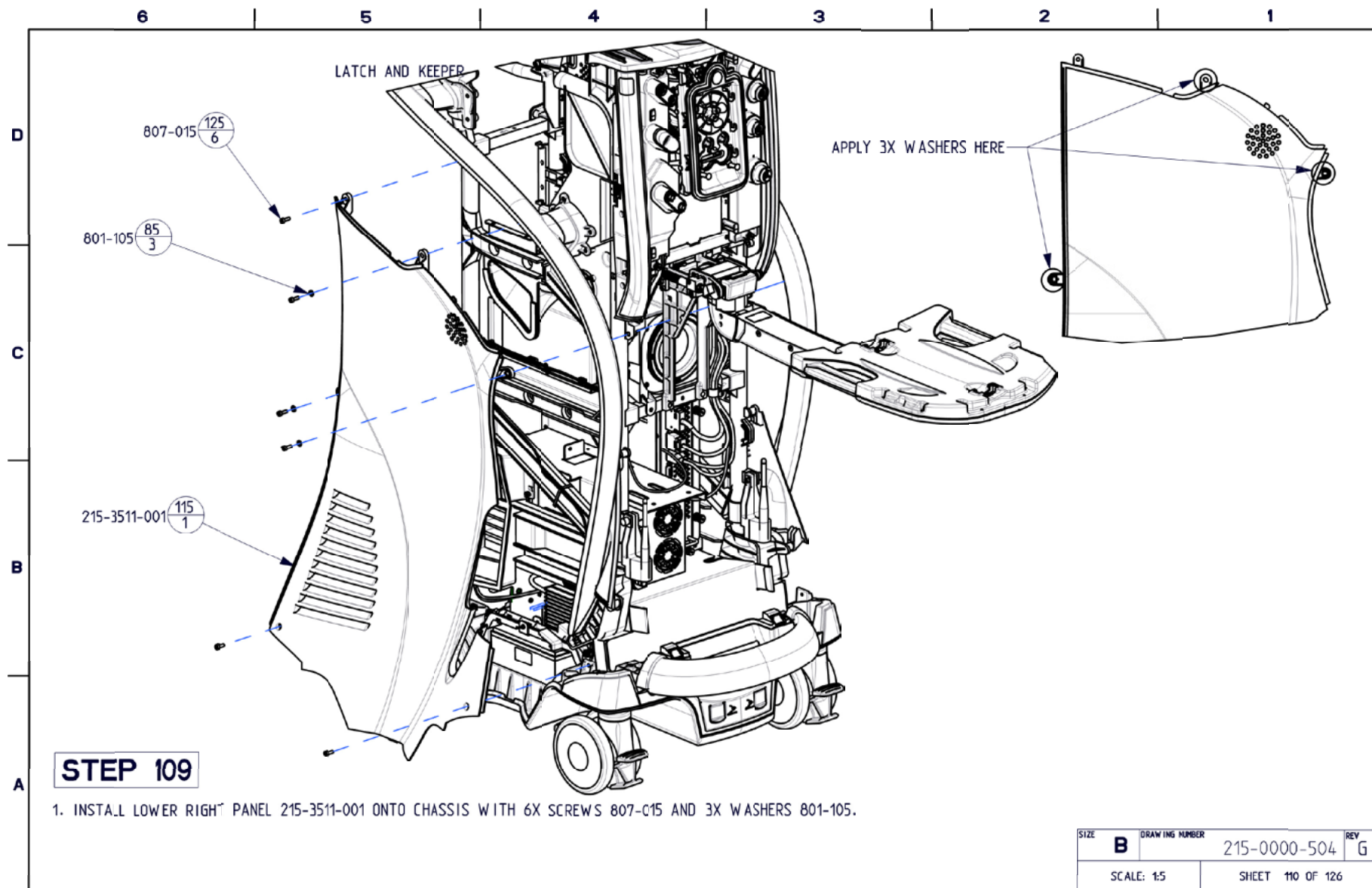
A



STEP 108

1. INSTALL FRONT BUMPER 215-1278-001 ONTO BASE 215-1219-001 WITH 4X WASHERS 801-006 AND 4X SCREWS 807-047.

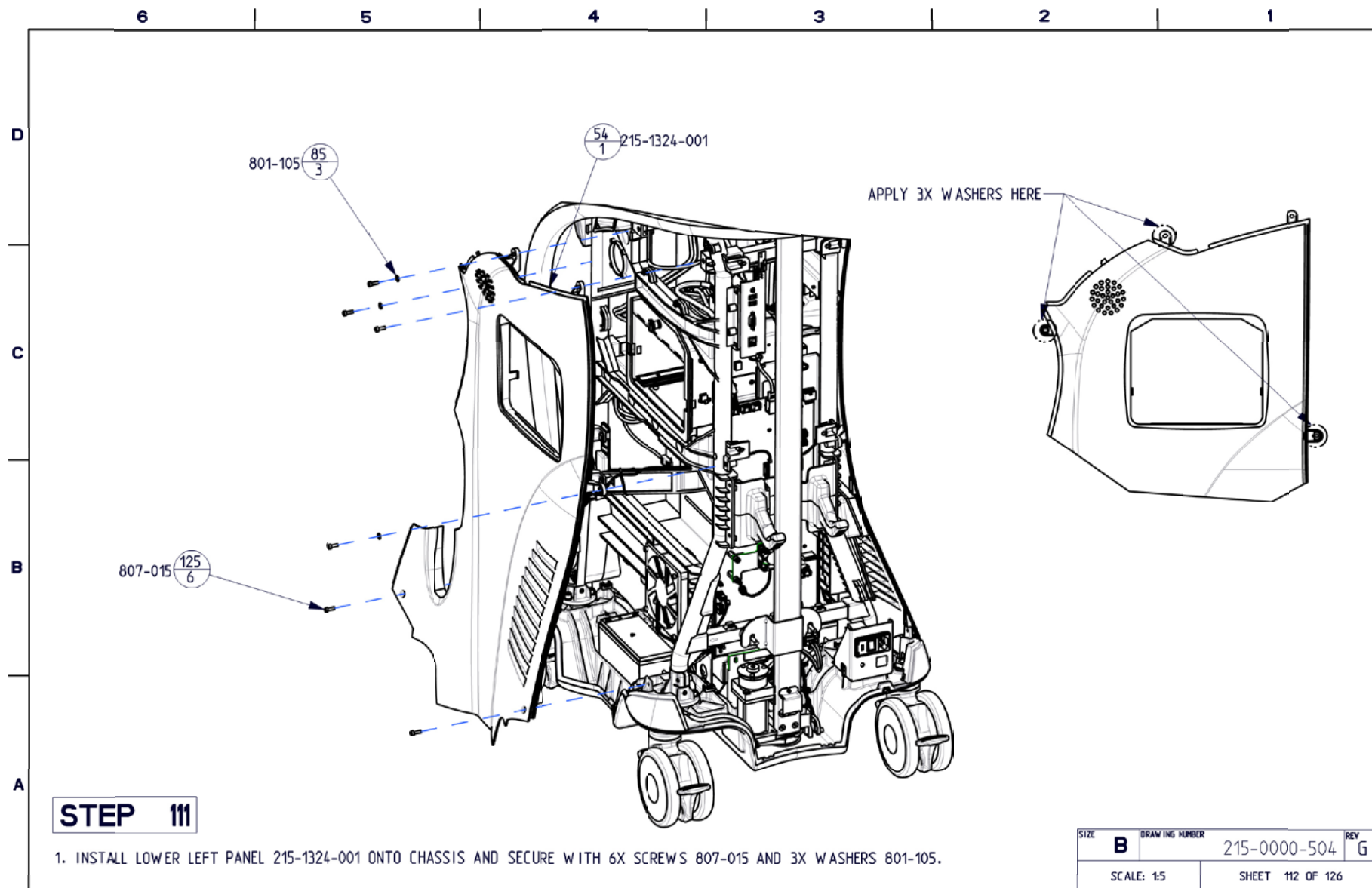
SIZE	B	DRAWING NUMBER	215-0000-504	REV	G
SCALE: 3:10		SHEET 109 OF 126			

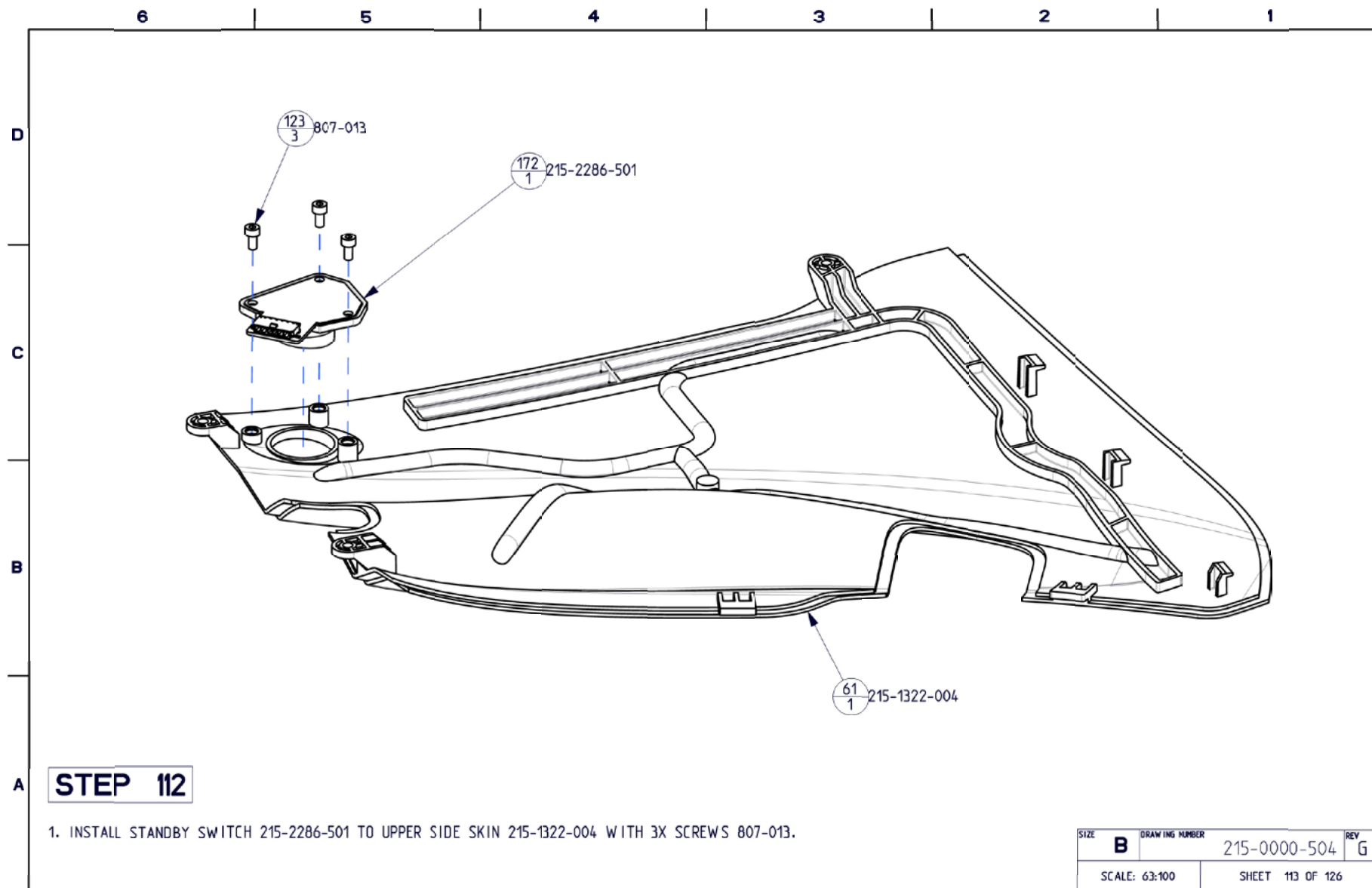


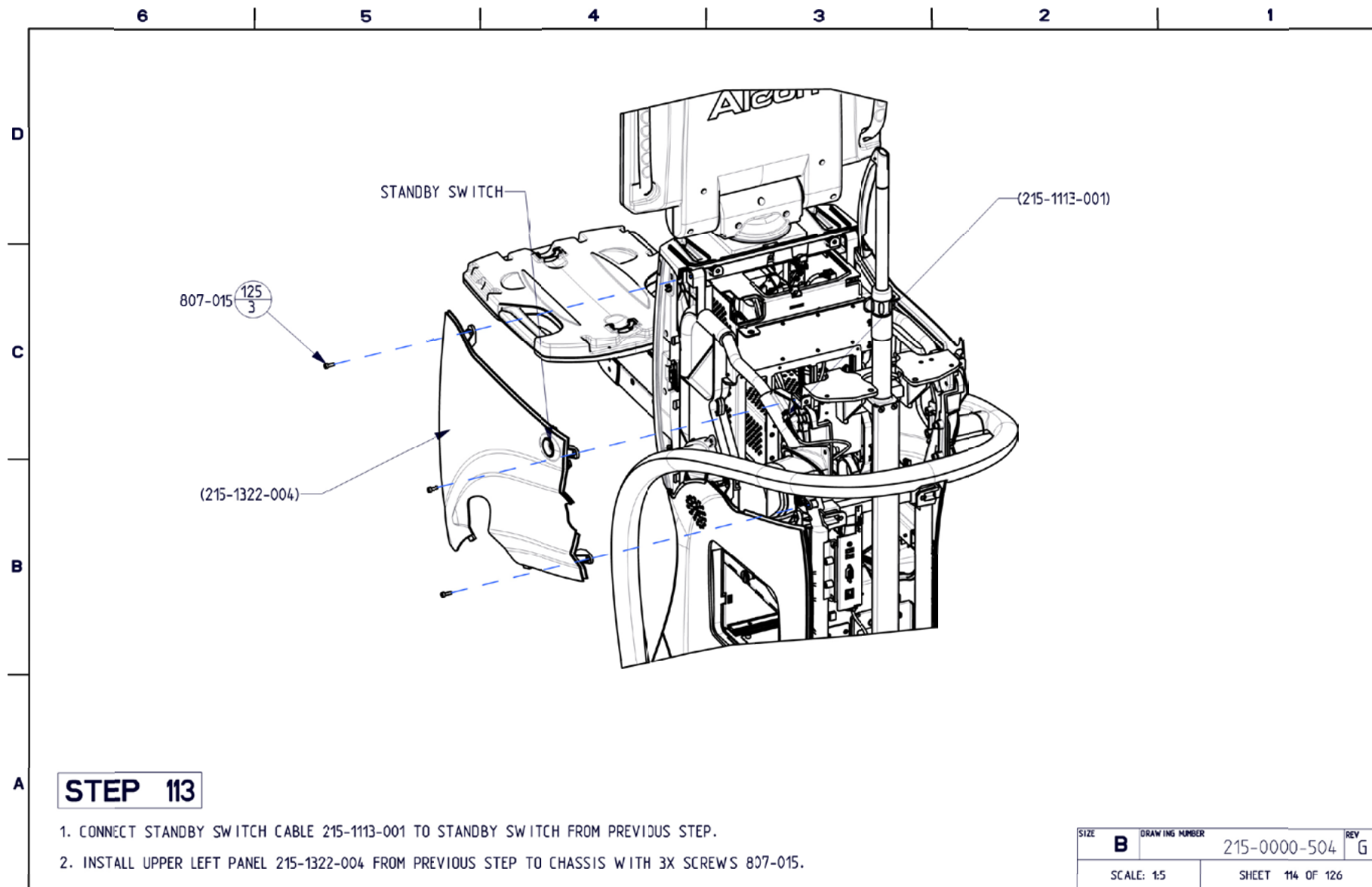


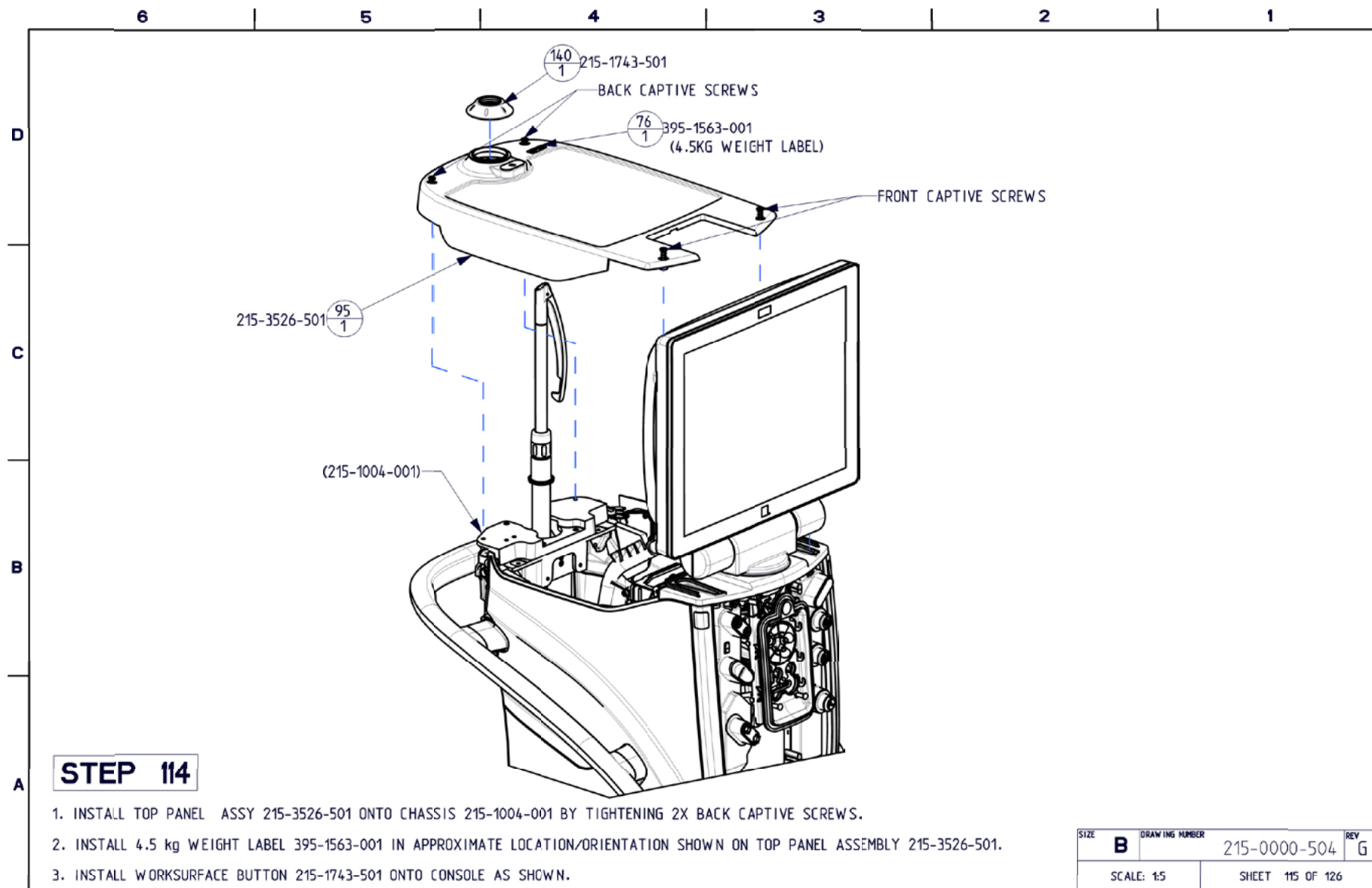
A

SIZE B	DRAWING NUMBER 215-0000-504	REV G
SCALE: 1:5		SHEET 111 OF 126







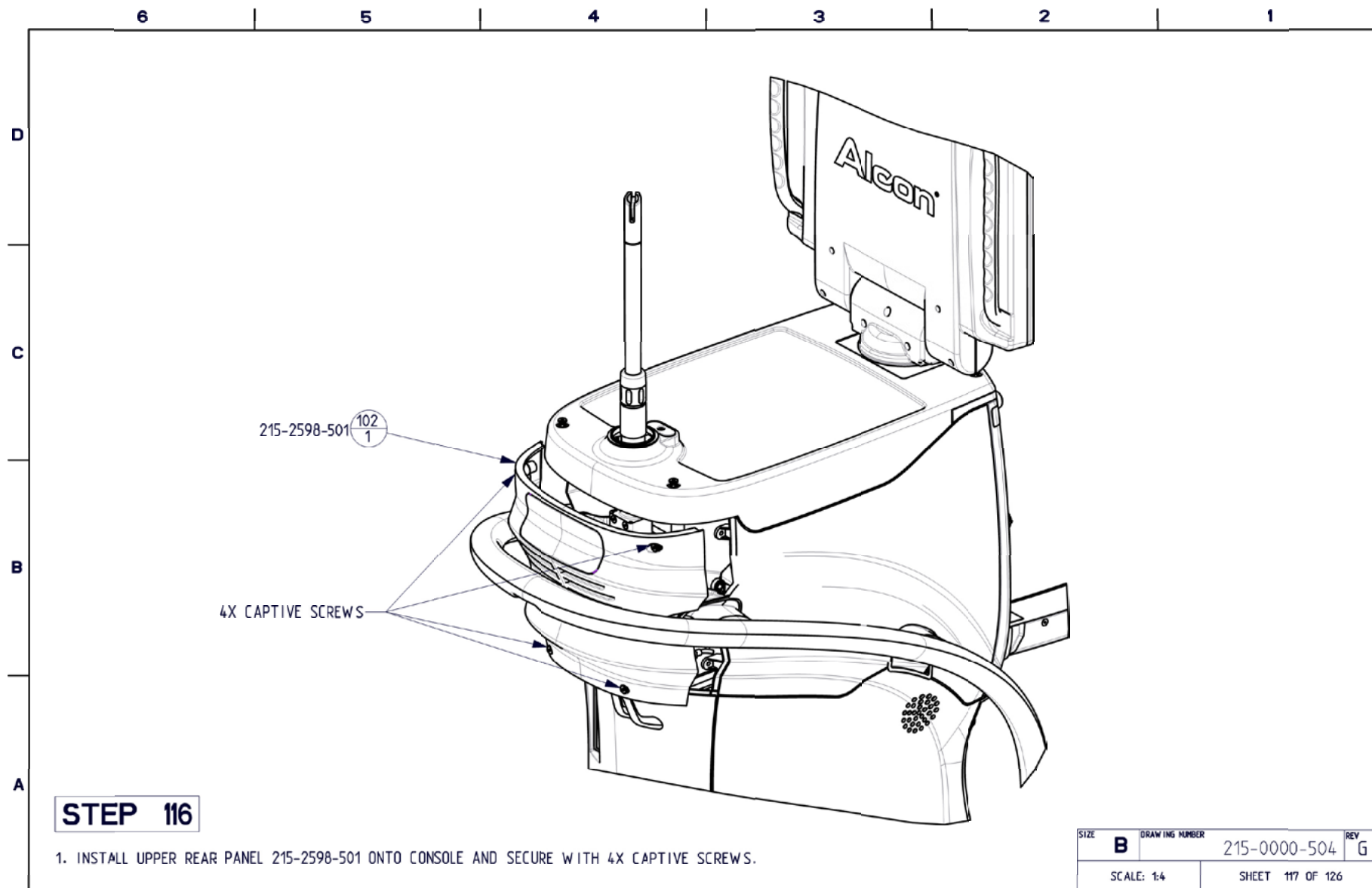


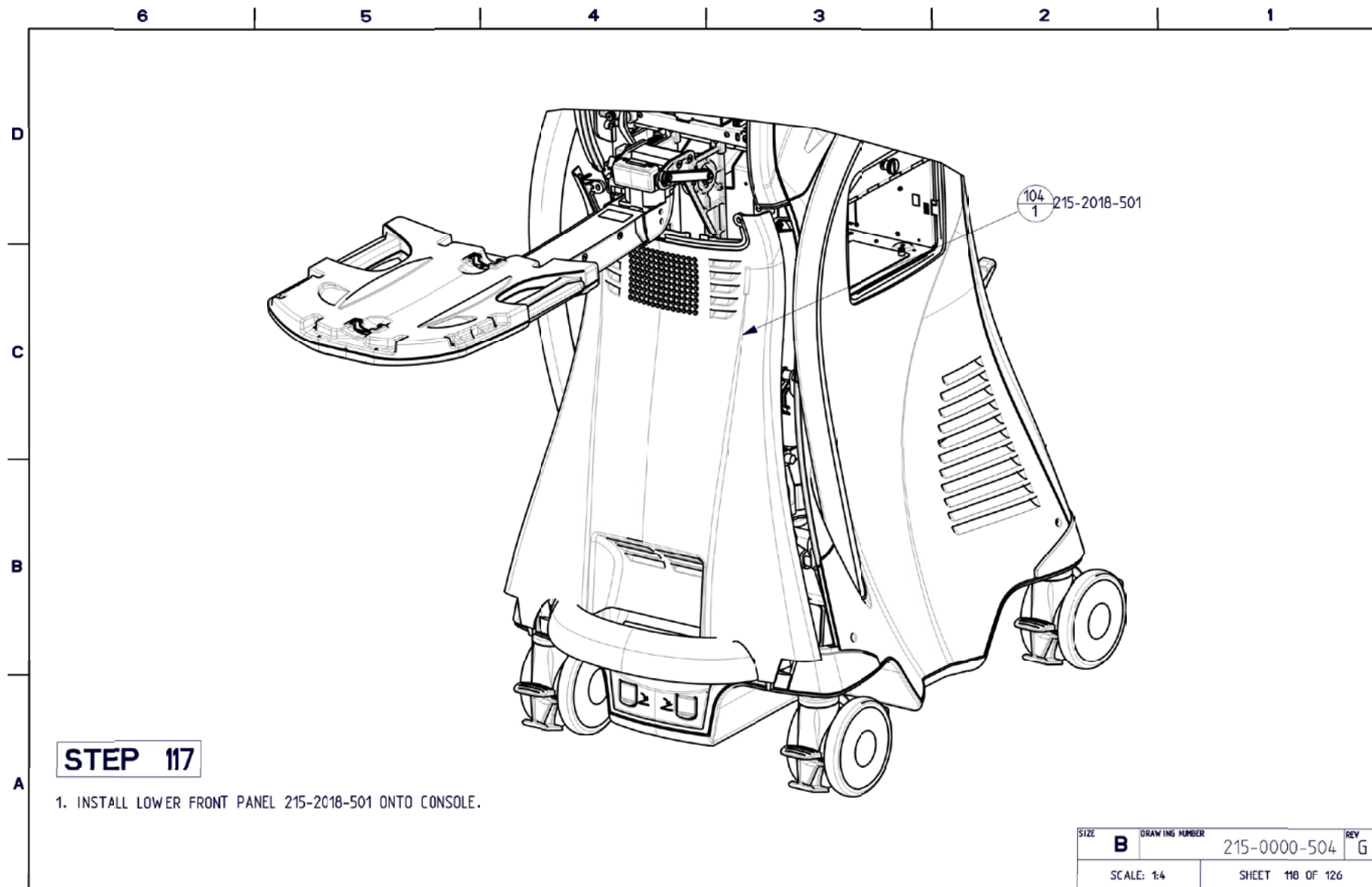


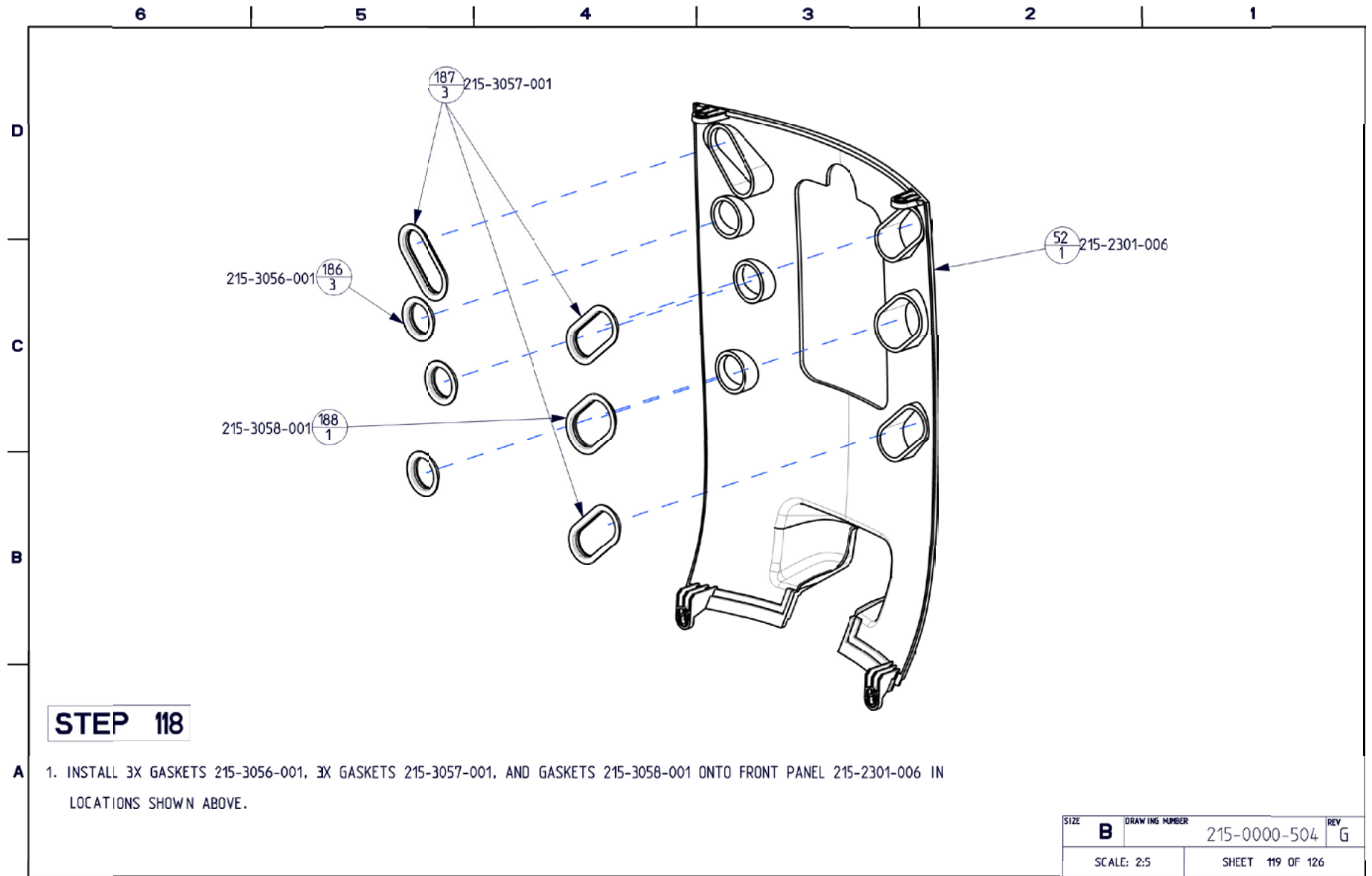
A

1. SECURE BATTERY CABLE 215-1130-001 (W130) TO CHASSIS WITH TIE WRAP 027-C03 IN IDENTIFIED LOCATION. REFERENCE CABLE ROUTING FILE 215-0000-504_PROC_CABLE.ASM "R21" FOR DETAILS.
2. INSTALL LOWER REAR PANEL ASSY 215-2822-502 ONTO CONSOLE AND SECURE WITH 2X CAPTIVE SCREWS.

SIZE B	DRAWING NUMBER 215-0000-504	REV G
SCALE: 1:5		SHEET 116 OF 126







6 | 5 | 4 | 3 | 2 | 1

TRAY ARM ASSY (215-1091-502) HAS BEEN HIDDEN FOR CLARIFICATION.

D

C

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FRONT CAPTIVE SCREWS OF 215-3526-501

(215-2301-006)

CAPTIVE SCREWS

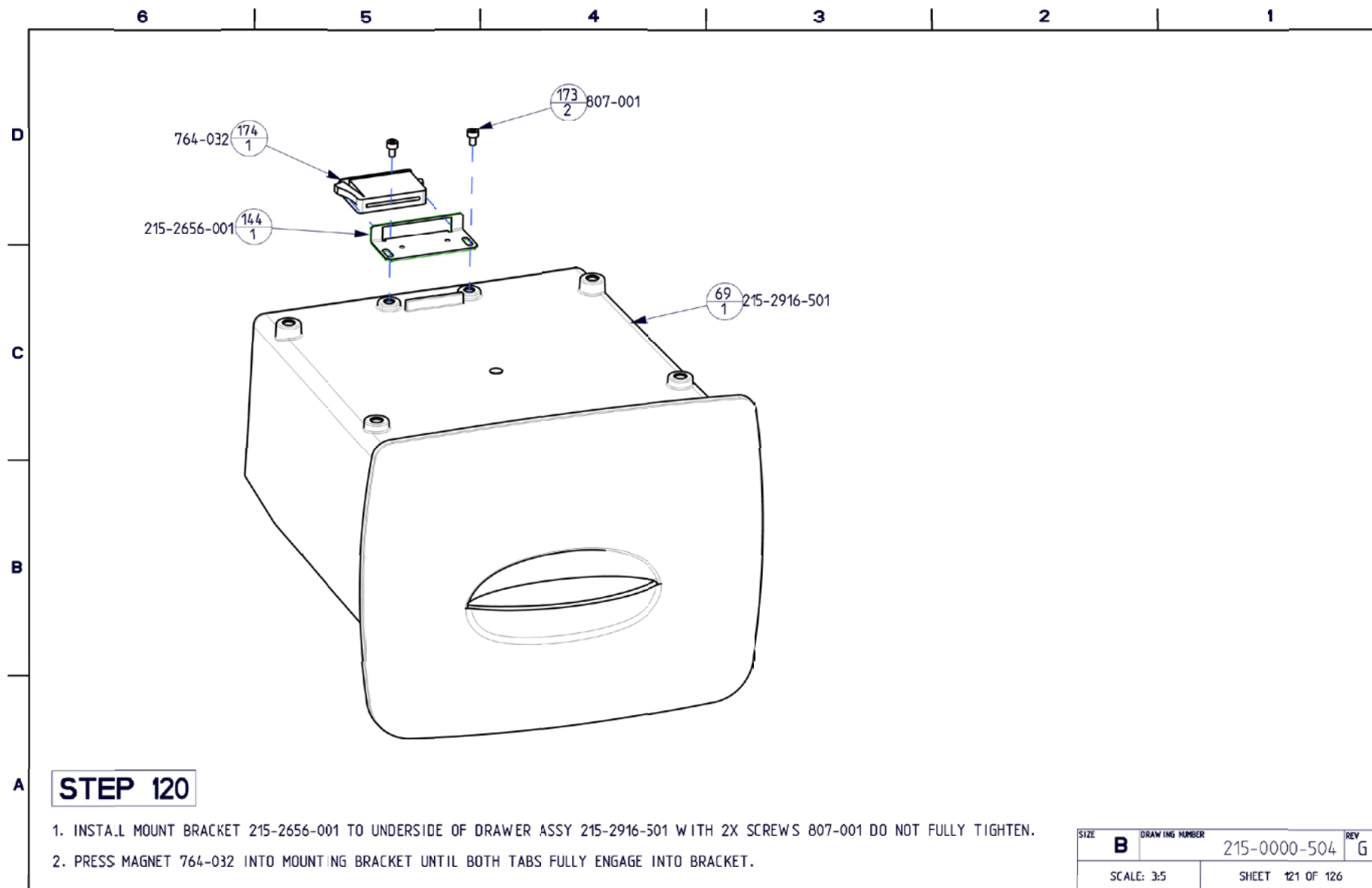
215-3111-501 ⁴⁴/₁

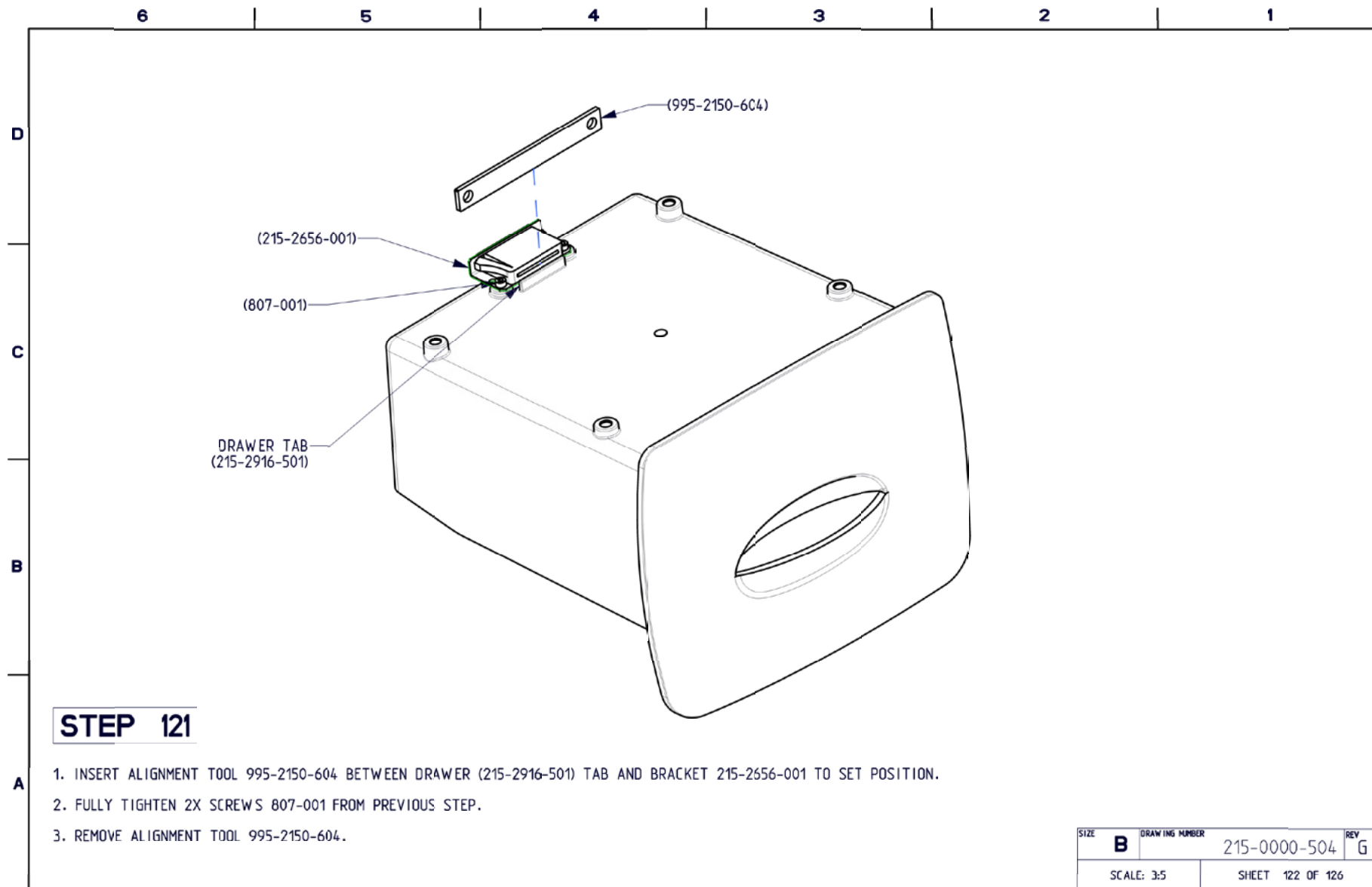
(215-2018-501)

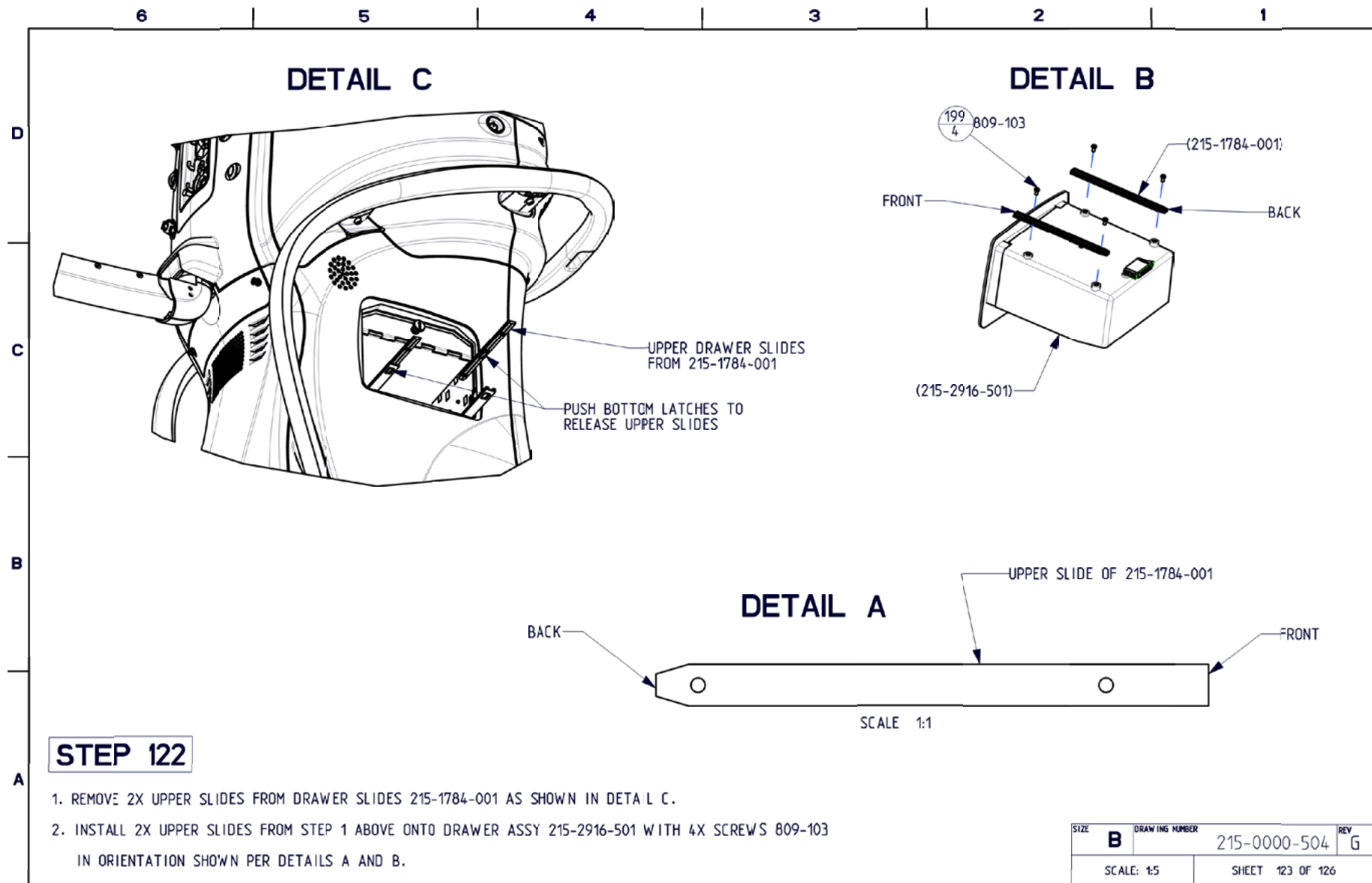
STEP 119

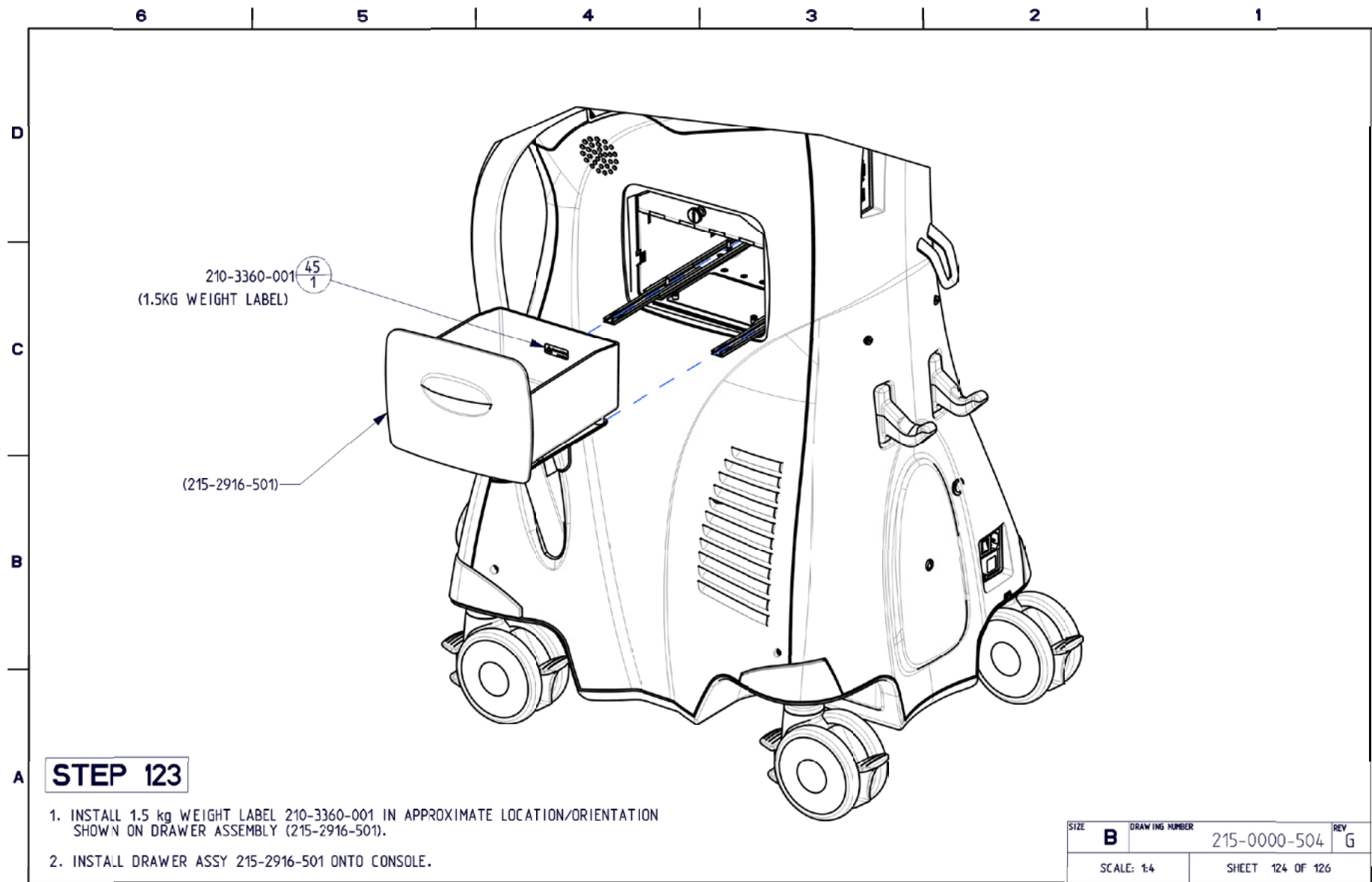
1. INSTALL UPPER FRONT PANEL 215-2301-006 ONTO CONSOLE.
2. INSTALL FRONT VENT PANEL 215-3111-501 ONTO CONSOLE AND SECURE PANELS 215-2301-006, 215-3111-501 AND 215-2018-501 TO CONSOLE WITH 2X CAPTIVE SCREWS.
3. SECURE DISPLAY INSERT ASSY 215-3526-501 TO CONSOLE BY TIGHTENING 2X FRONT CAPTIVE SCREWS.

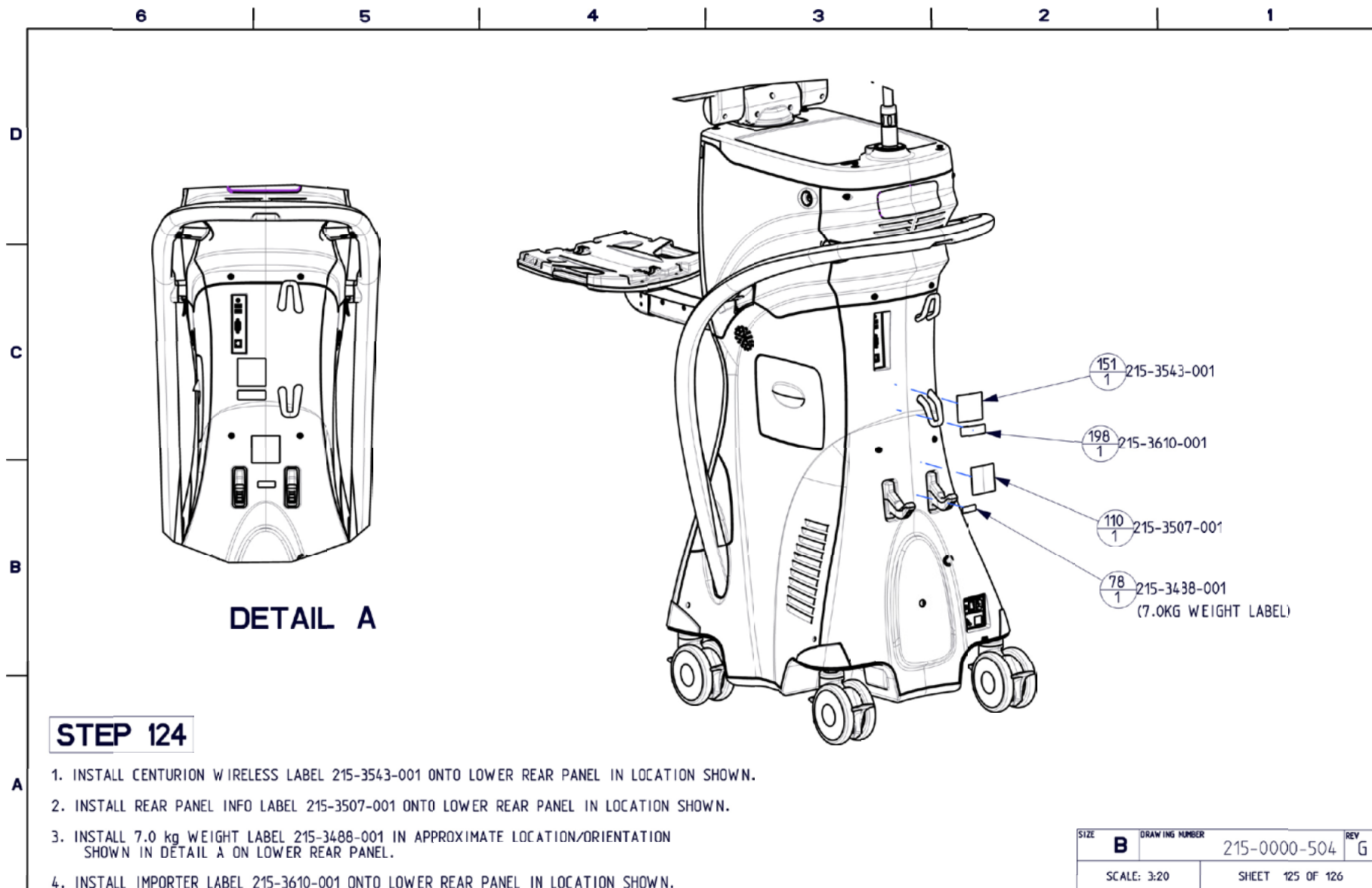
SIZE	B	DRAWING NUMBER	215-0000-504	REV	G
SCALE: 1:4		SHEET 120 OF 126			

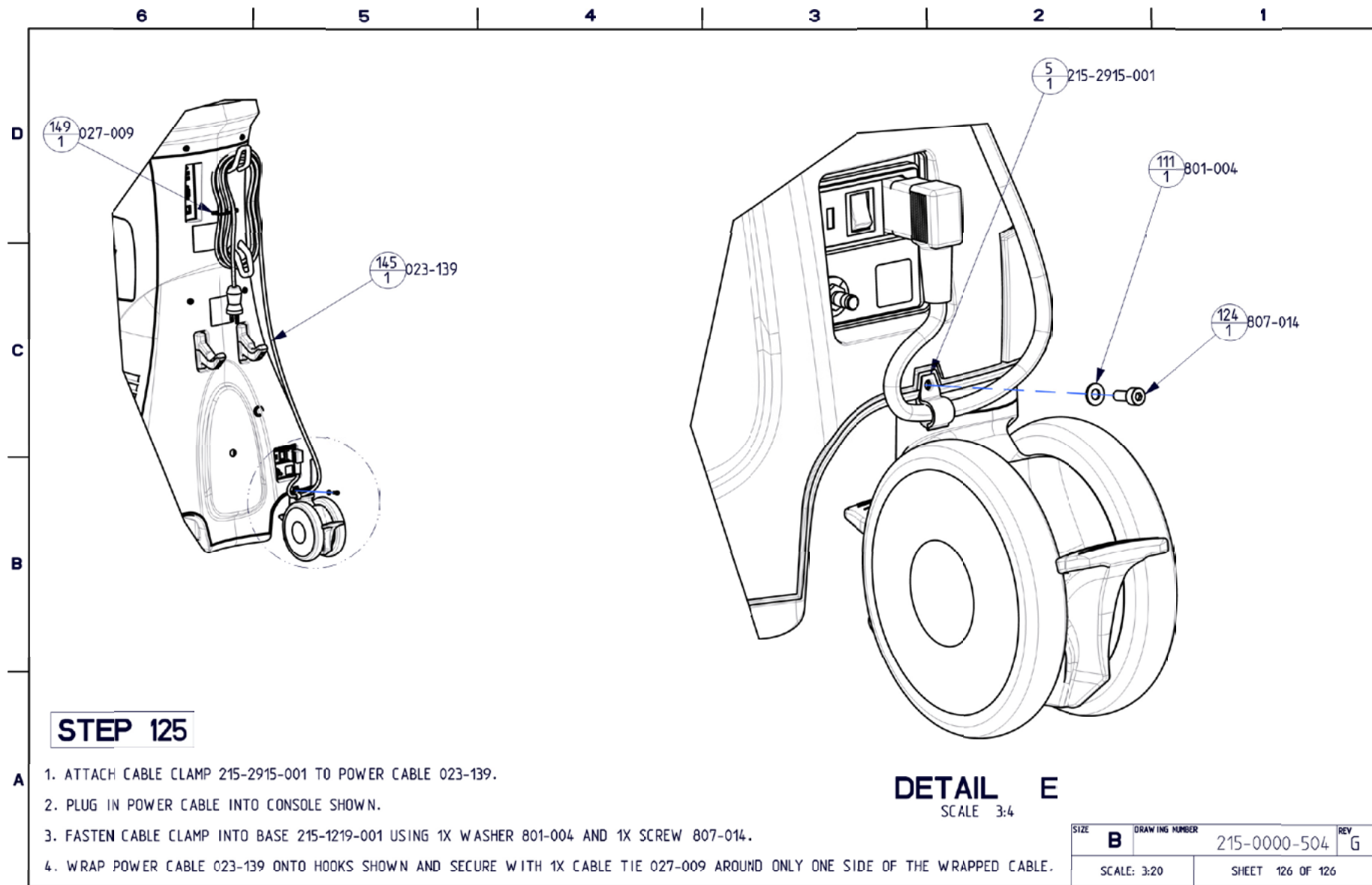












6

5


4

3

2

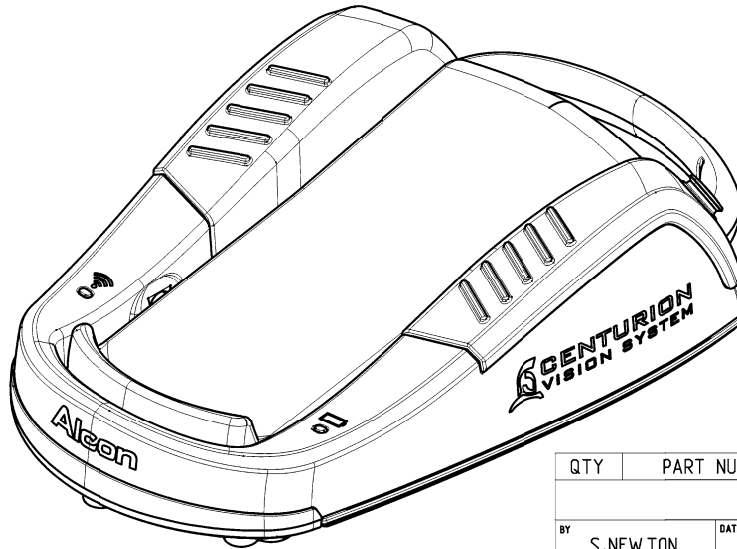
1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. REFER TO MAP 992-2150-010.
5. FOLLOW ESD PRECAUTIONS ON ALL STEPS.
6. APPLY NYLON TIES AS REQUIRED FOR CABLE MANAGEMENT.
7. APPLY ITEM 71 ONLY IF ITEM 61 IS REV B OR EARLIER.


REVISION HISTORY

REV	ECN	DATE
P18	NOT RELEASED	06/20/13
A	CN046238ECN	07/23/13
B	CN047725ECN	09/03/13
C	CN049633ECN	11/05/13
D	CN057644ECN	09/12/14
E	CN058176ECN	10/15/14
F	CN059179ECN	12/16/14
G	CN060921ECN	04/04/15
H	CN061482ECN	05/05/15
J	CN062362ECN	07/15/15
K	CN063738ECN	09/10/15
L	CN063376ECN	12/02/15
M	CN067040ECN	07/08/16
N	CN068746ECN	09/22/16



3D VIEW

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	S.NEWTON	DATE	3/11/11	<div>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.</div> <div></div> <div>Irvine, California 92618</div>
CHECKED	J.MCGUIRE	DATE	3/11/11	
APPROVED	J.ROTH	DATE	3/14/11	
FORMAT REVISION			2/23/2007	
PDMLINK MODEL ATTRIBUTES		NAME: 215-1016-502_PROC		VERSION: N.11

DESCRIPTION

ASSY,FOOTSWITCH

SIZE
B

DRAWING NUMBER

215-1016-502

REV
N

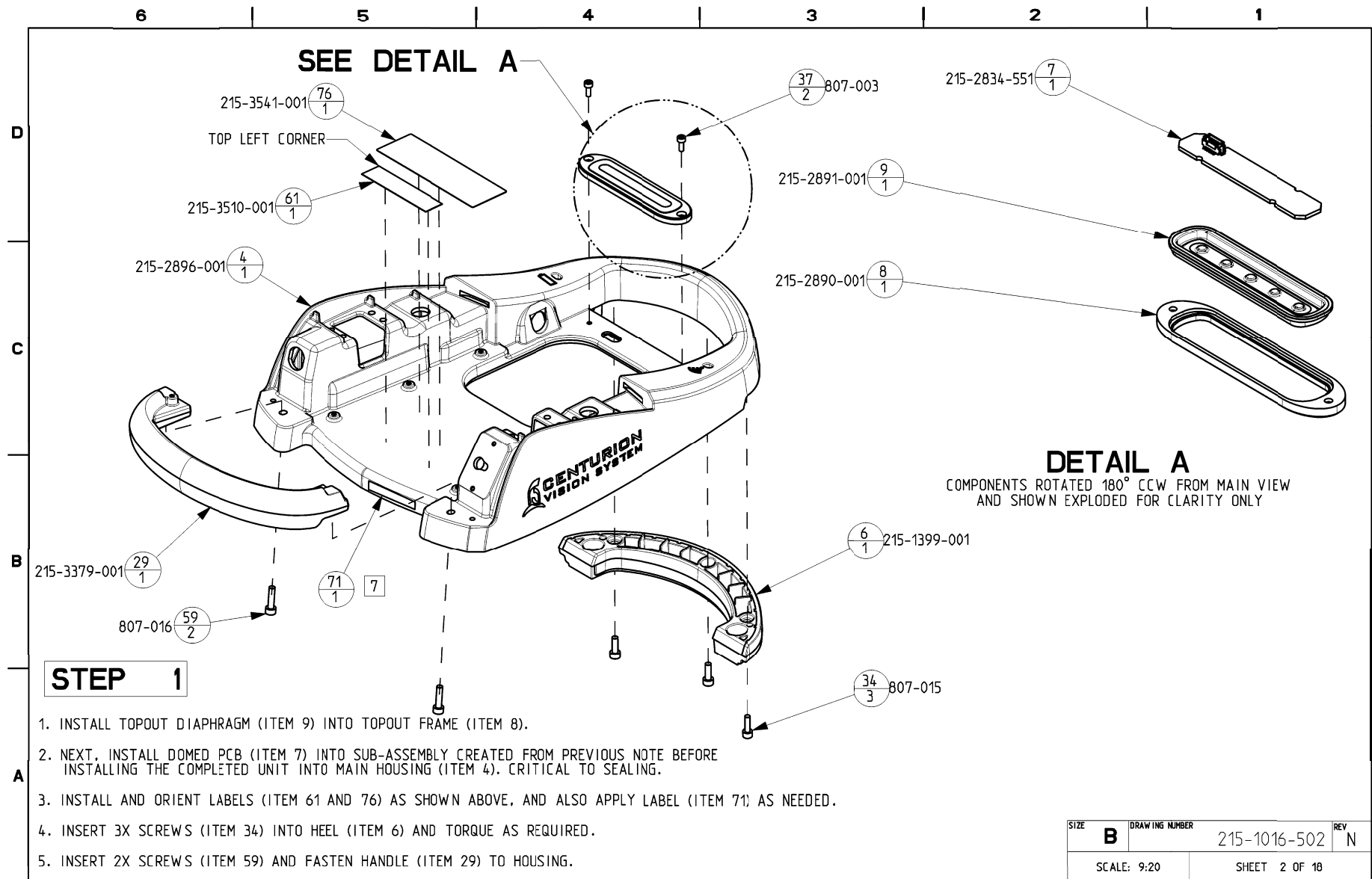
SCALE: 1:2

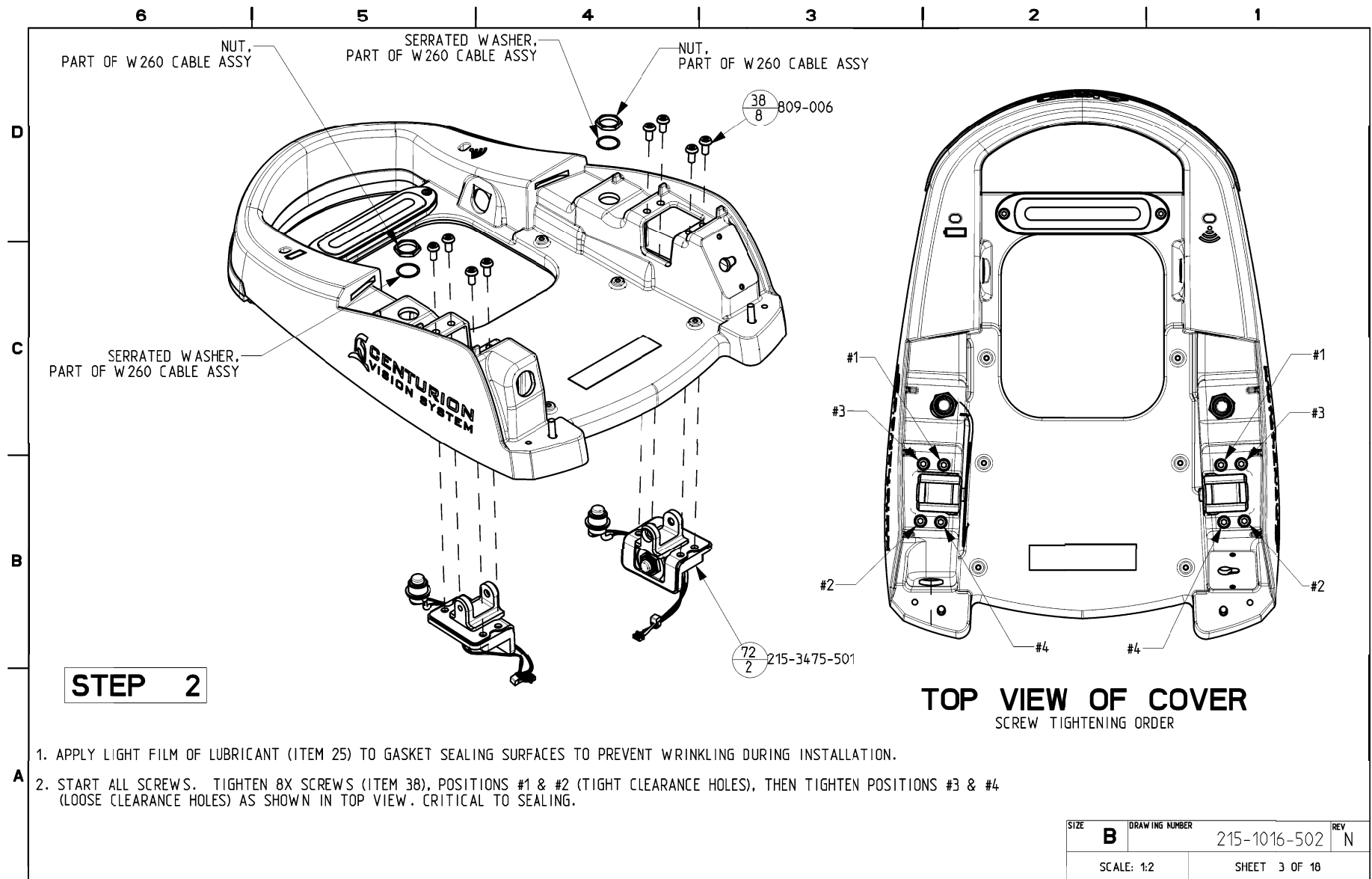
SHEET 1 OF 18

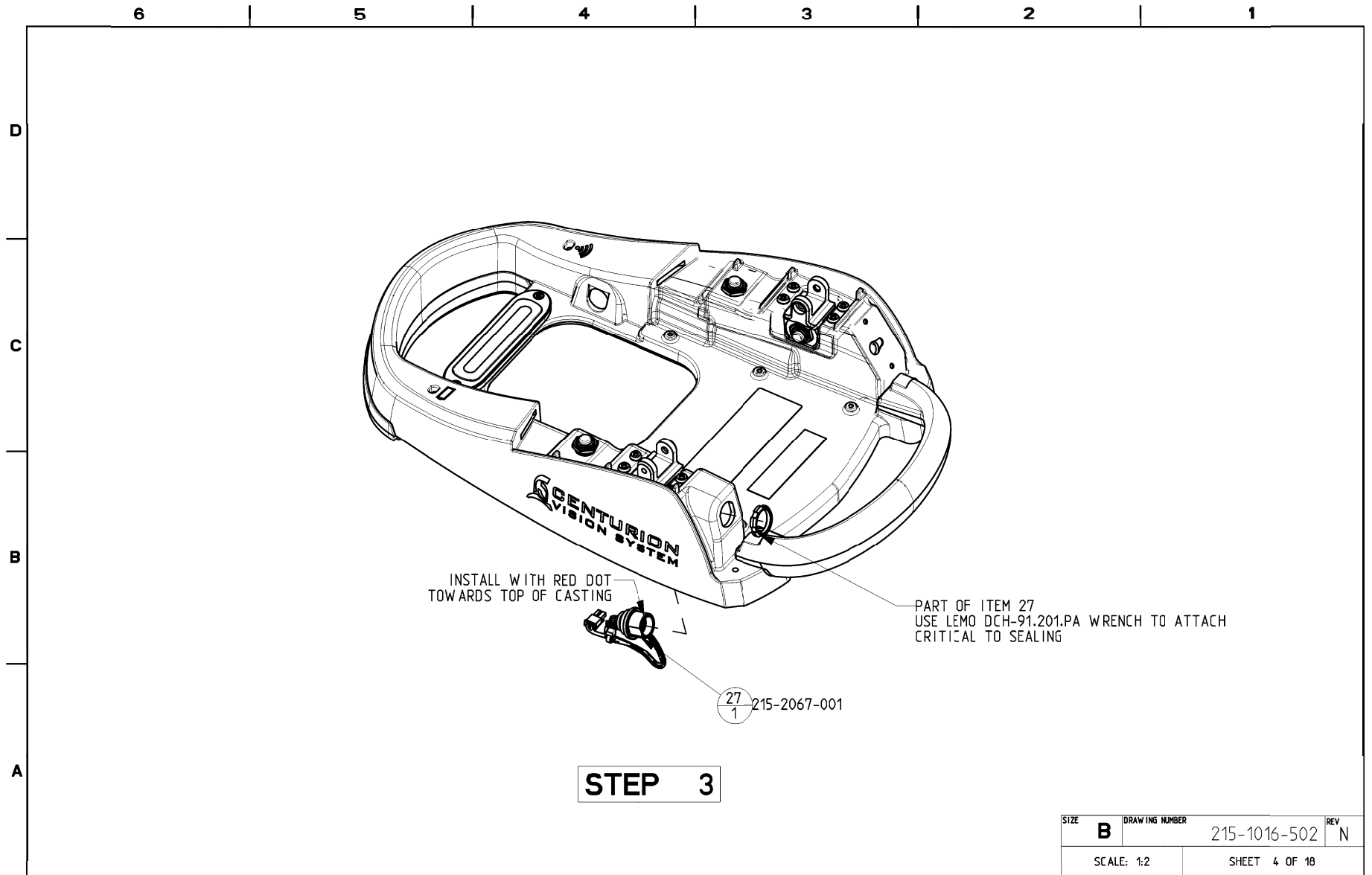
DRAWING NUMBER

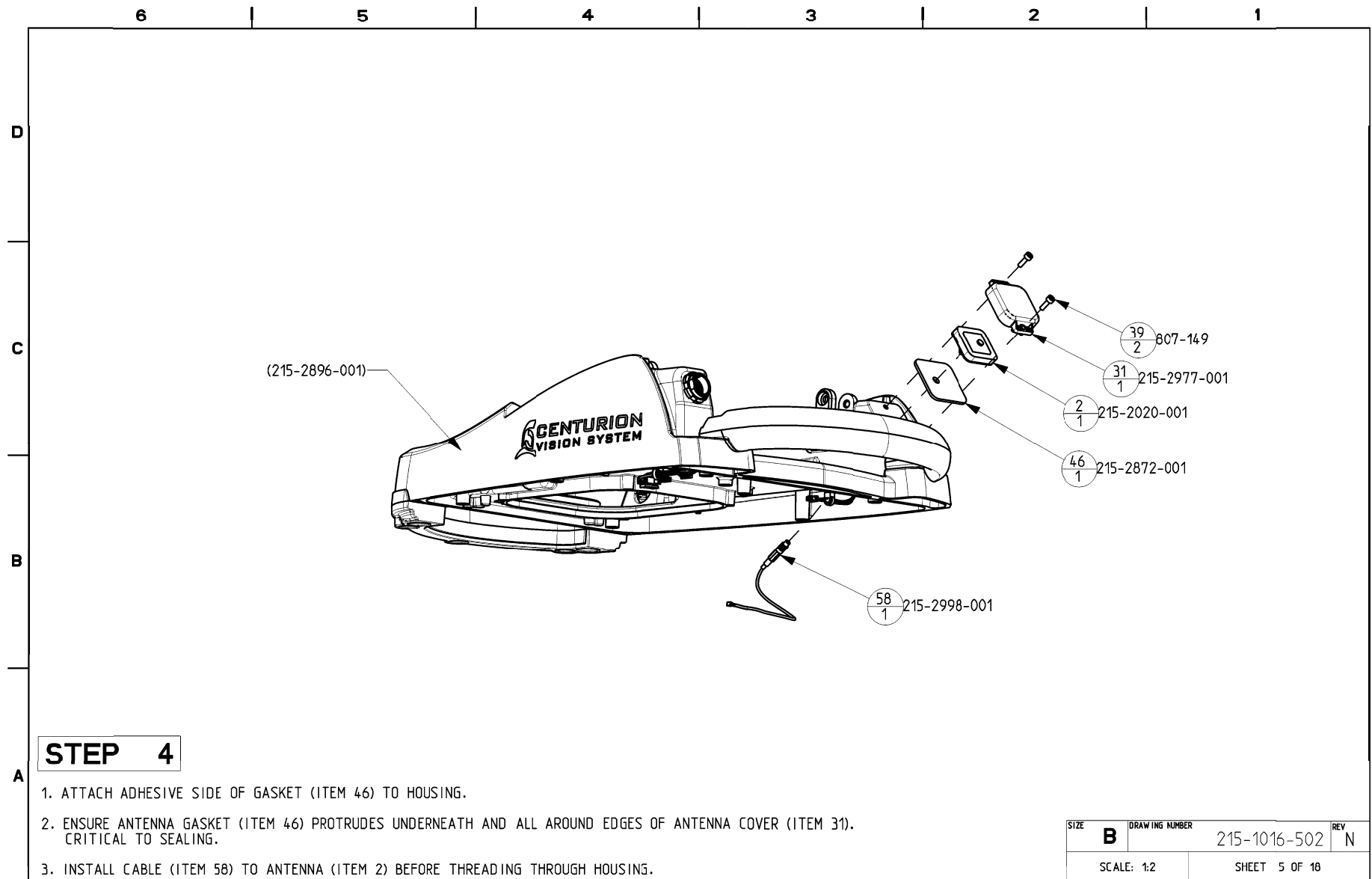
215-1016-502

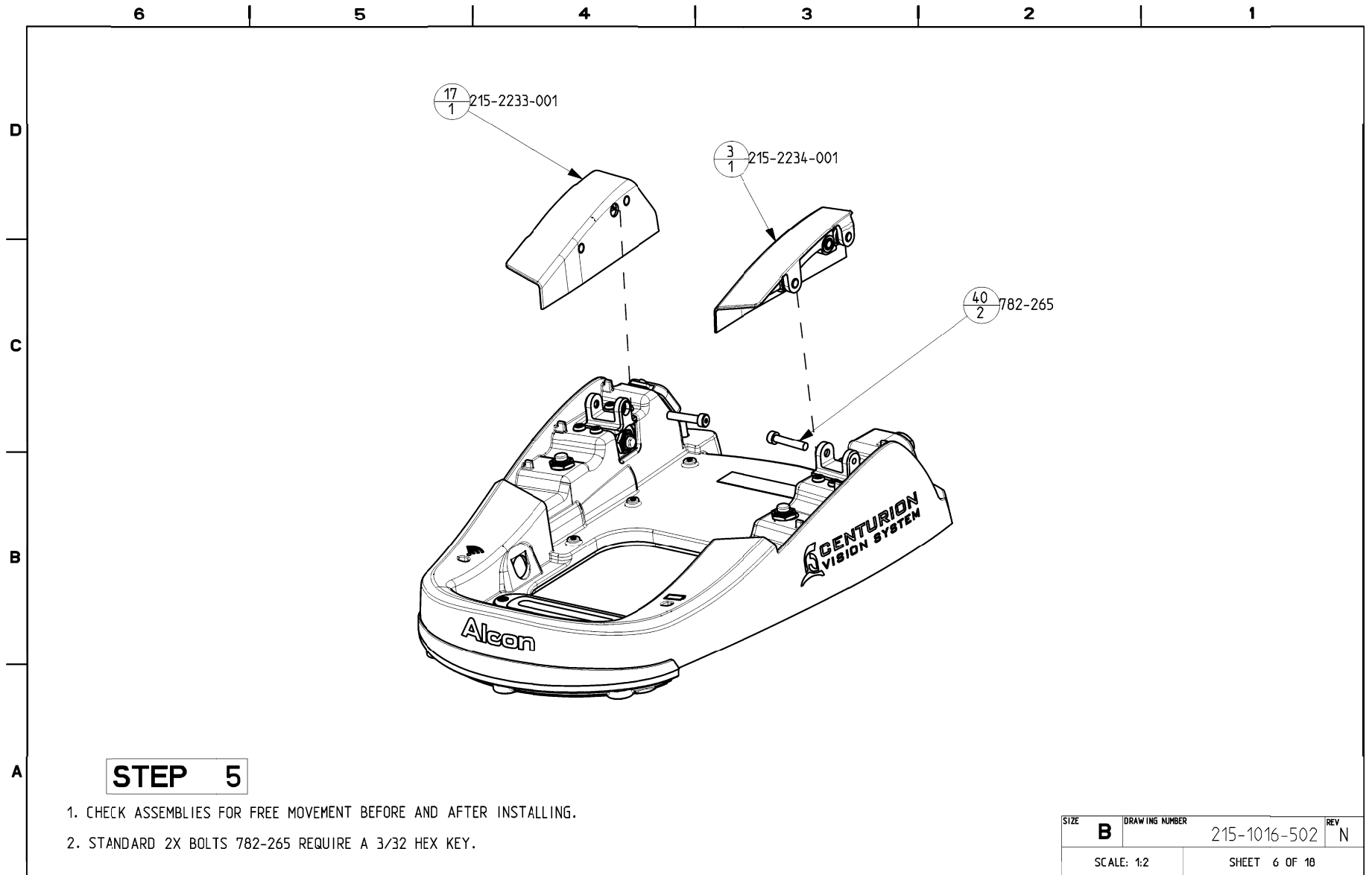
REV
N

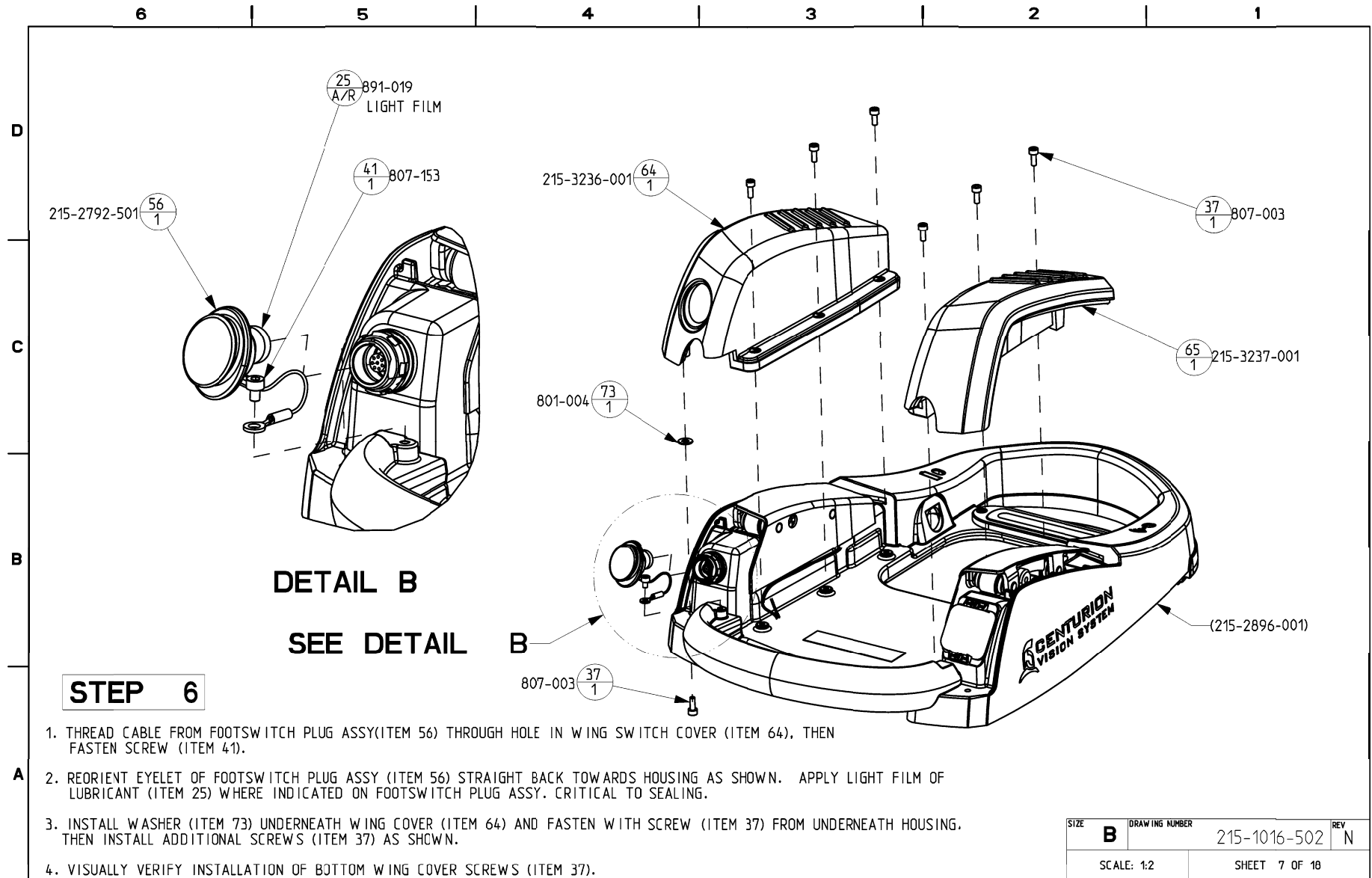


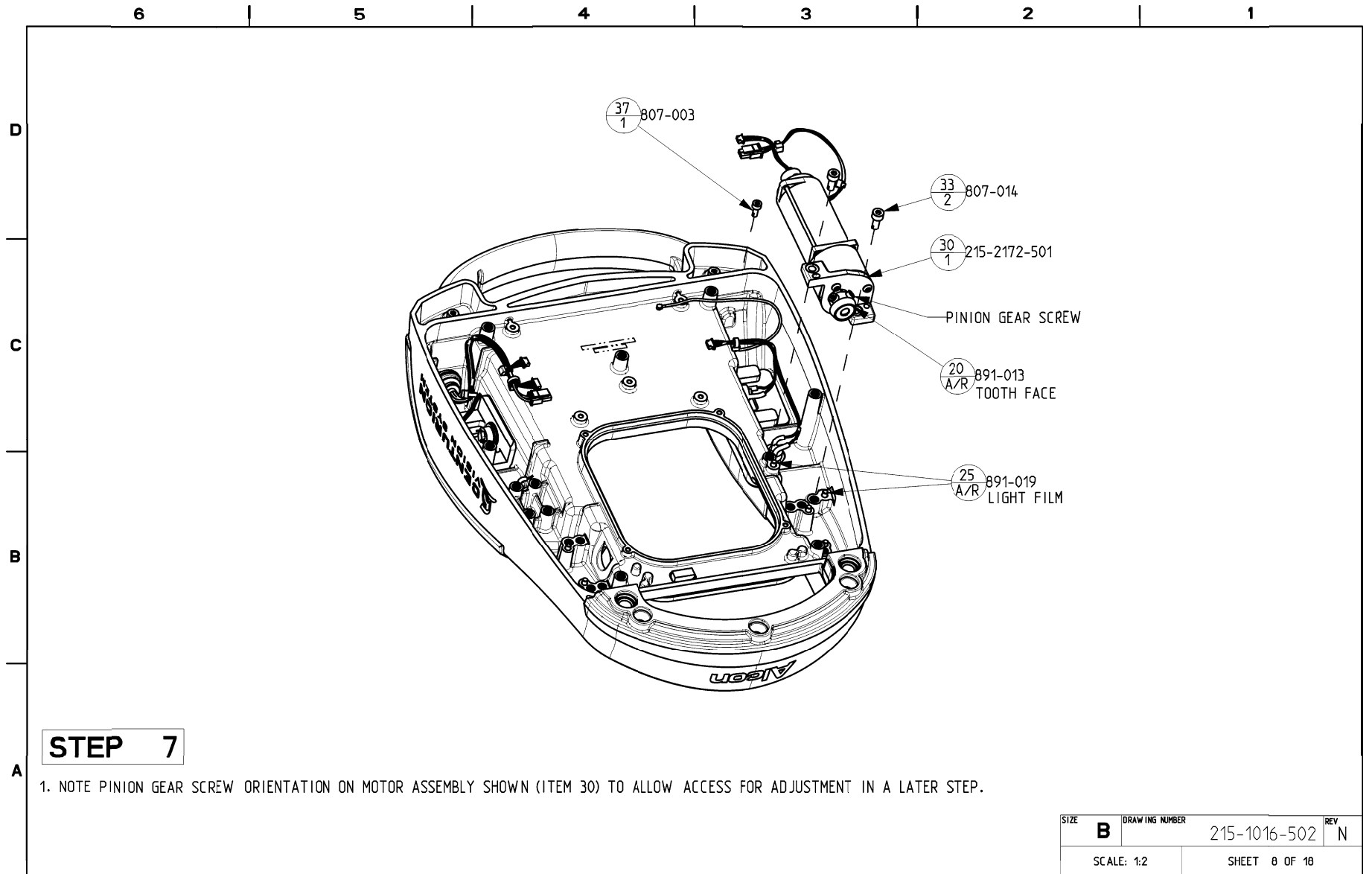


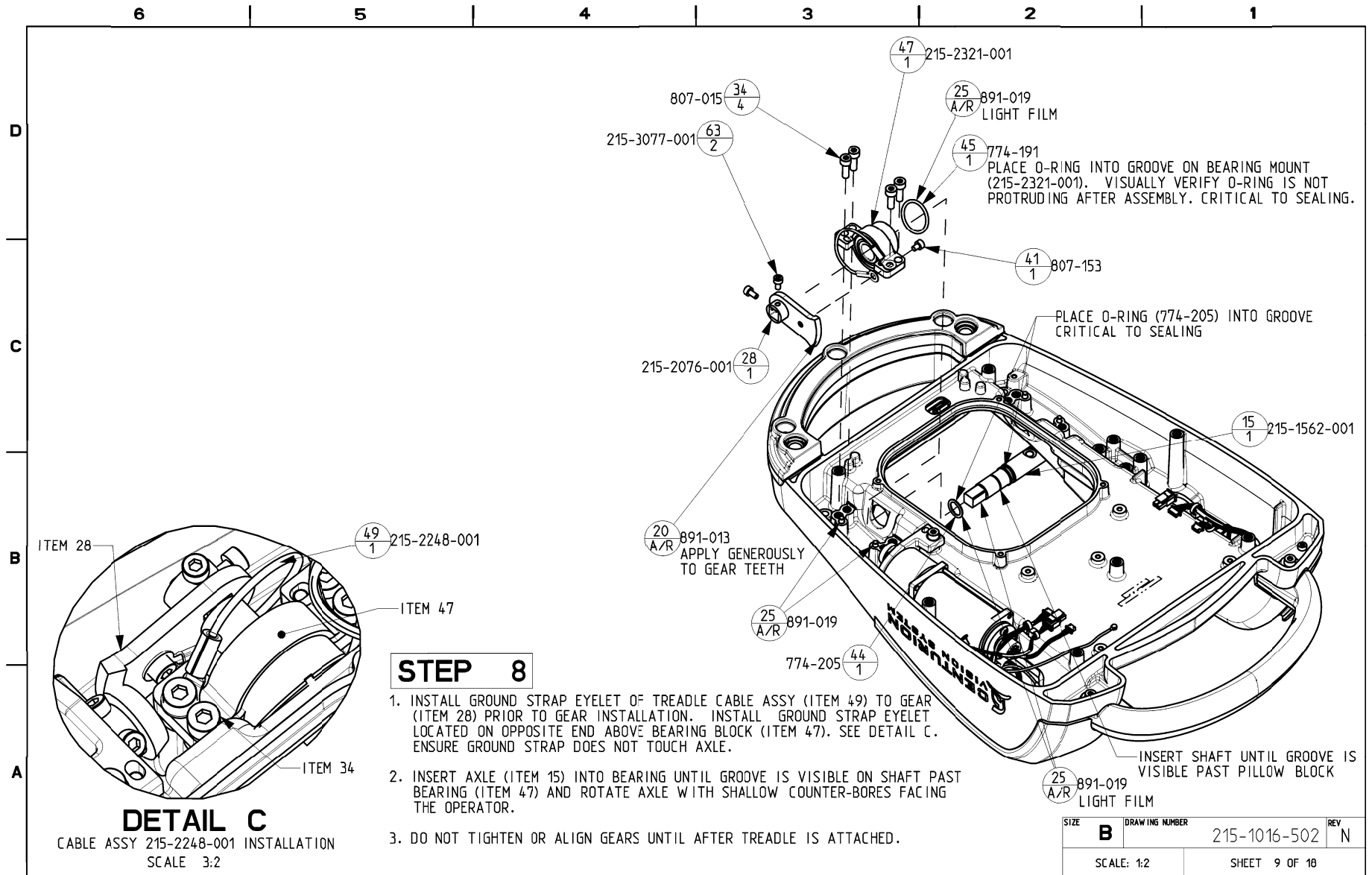


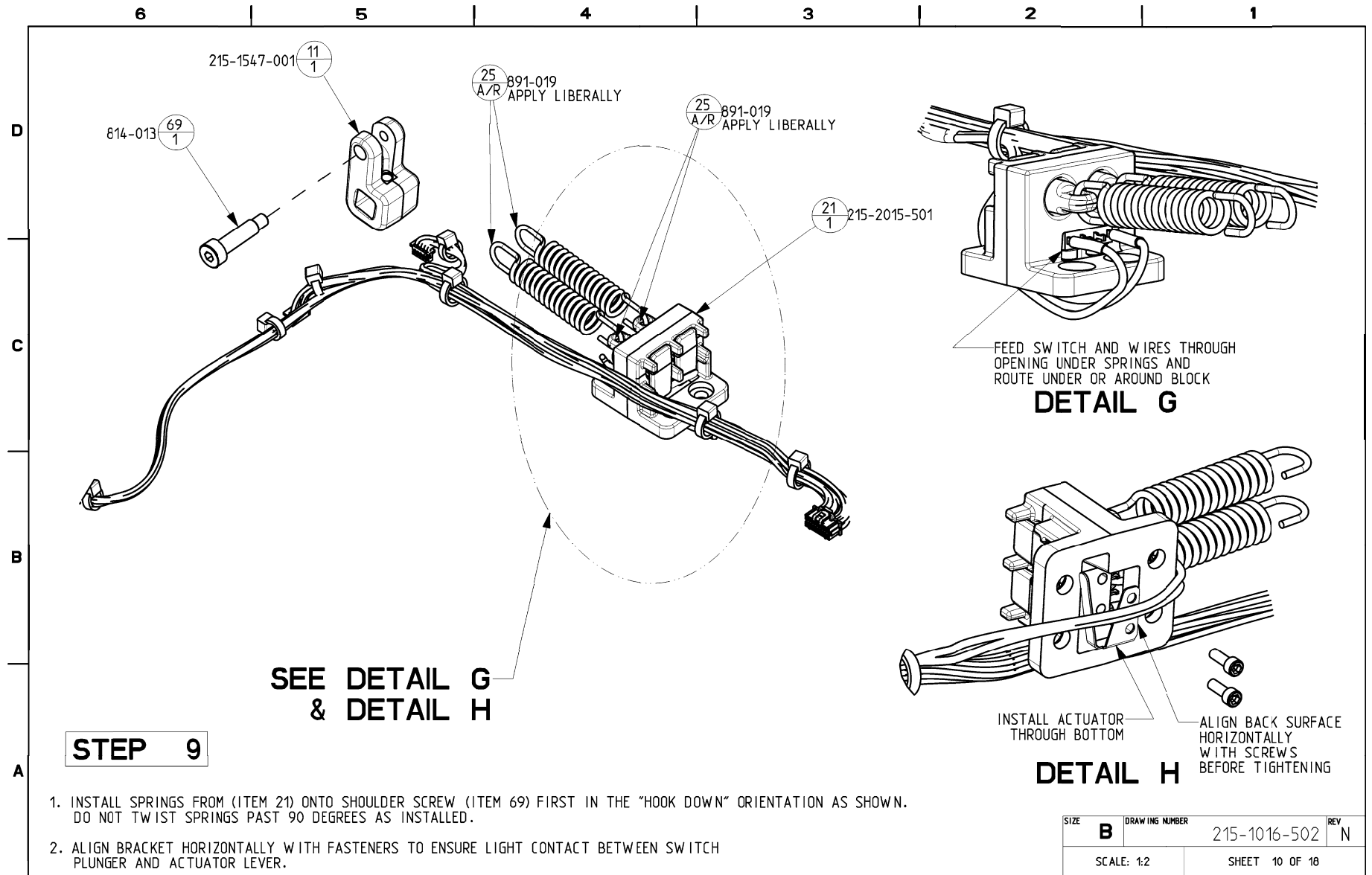


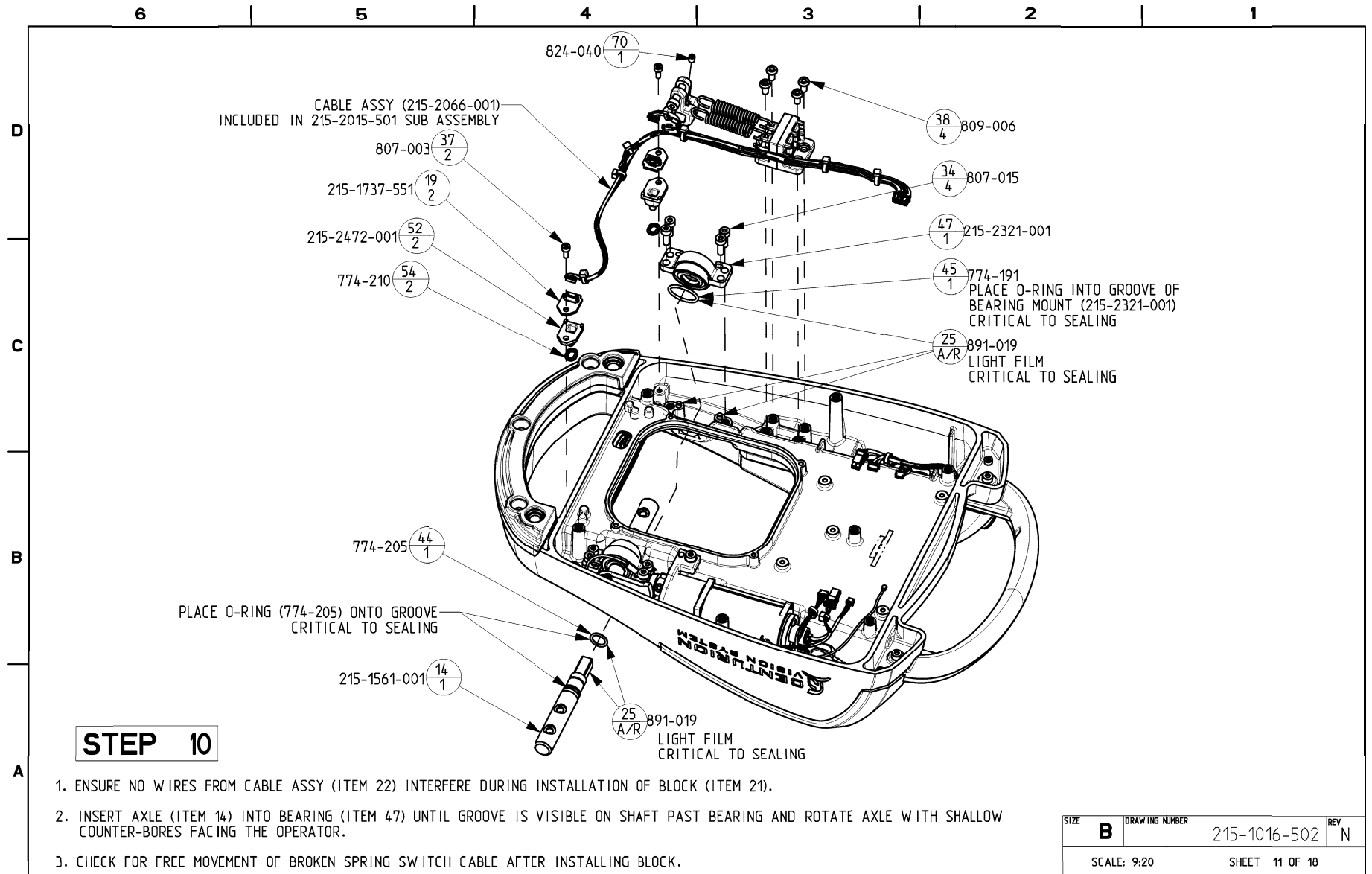












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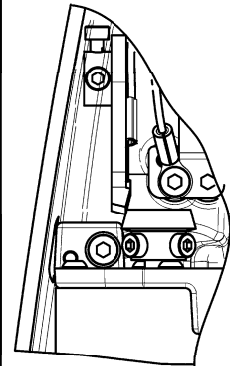
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2

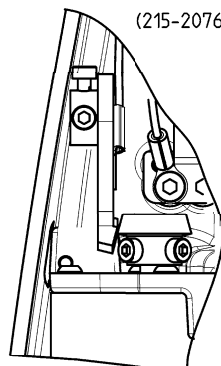
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GEAR MESH ILLUSTRATING:

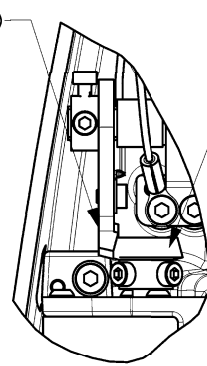
1. "DETAIL D" MISALIGNED GEARS WITH AXLE GEAR TOO FAR INBOARD
"INBOARD MISALIGNMENT"
2. "DETAIL E" MISALIGNED GEARS WITH AXLE GEAR TOO FAR OUTBOARD
"OUTBOARD MISALIGNMENT"
3. "DETAIL F" GEARS MESHED EVENLY WITH NOTE:
"CORRECT ALIGNMENT"



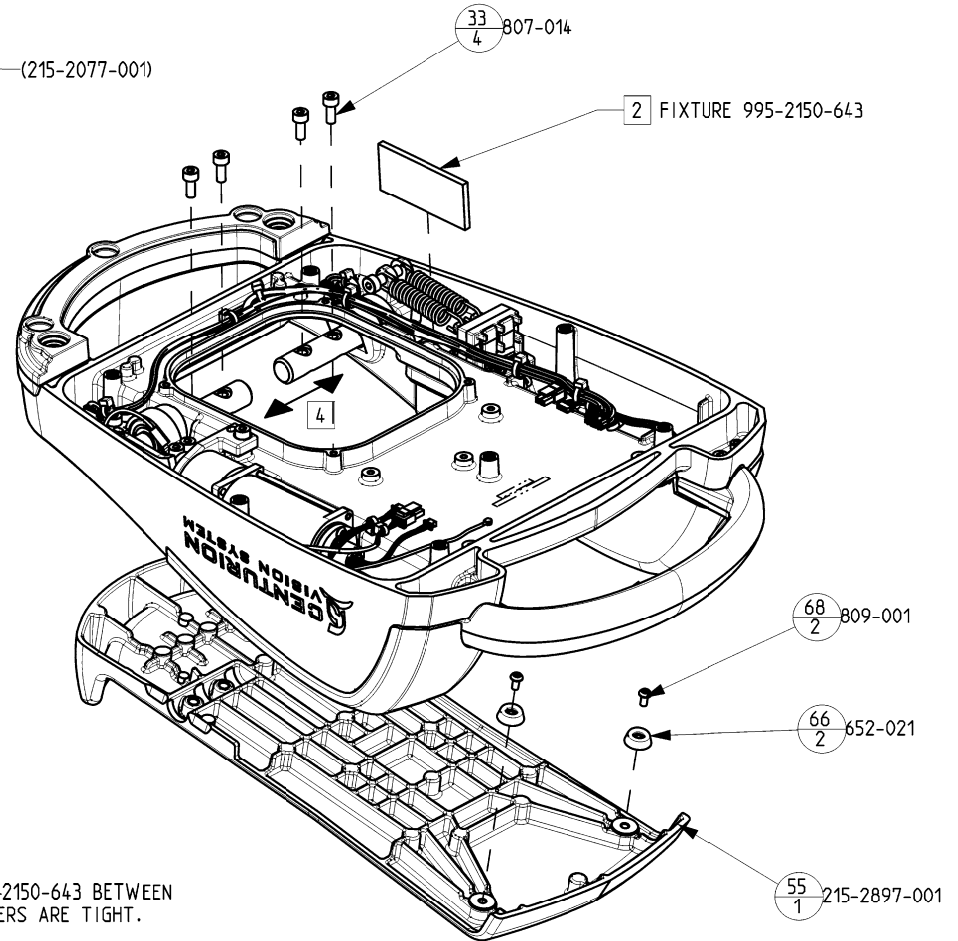
DETAIL D
(INBOARD MISALIGN)



DETAIL E
(OUTBOARD MISALIGN)



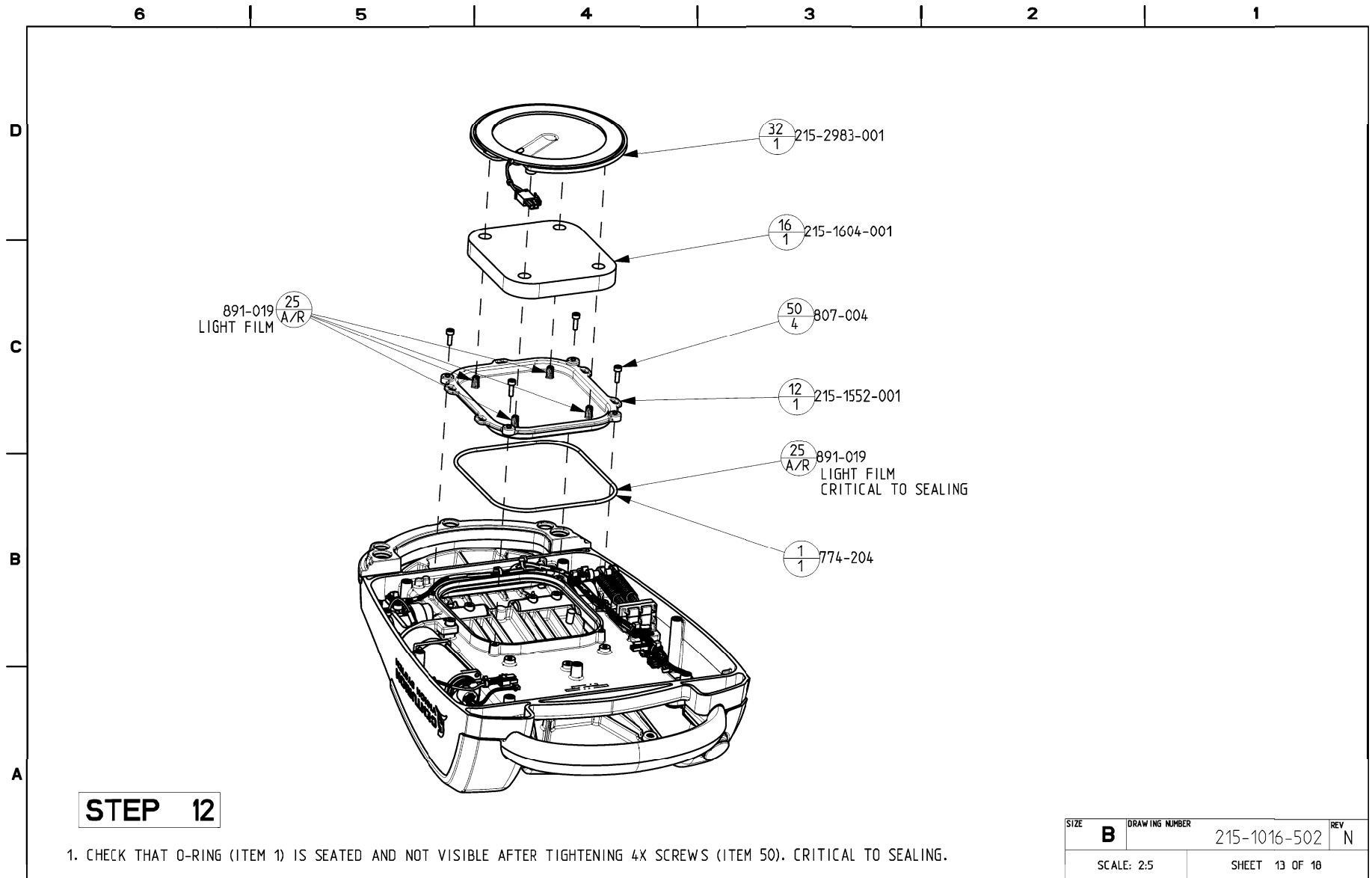
DETAIL F
(CORRECT ALIGNMENT)
SCALE 1:1

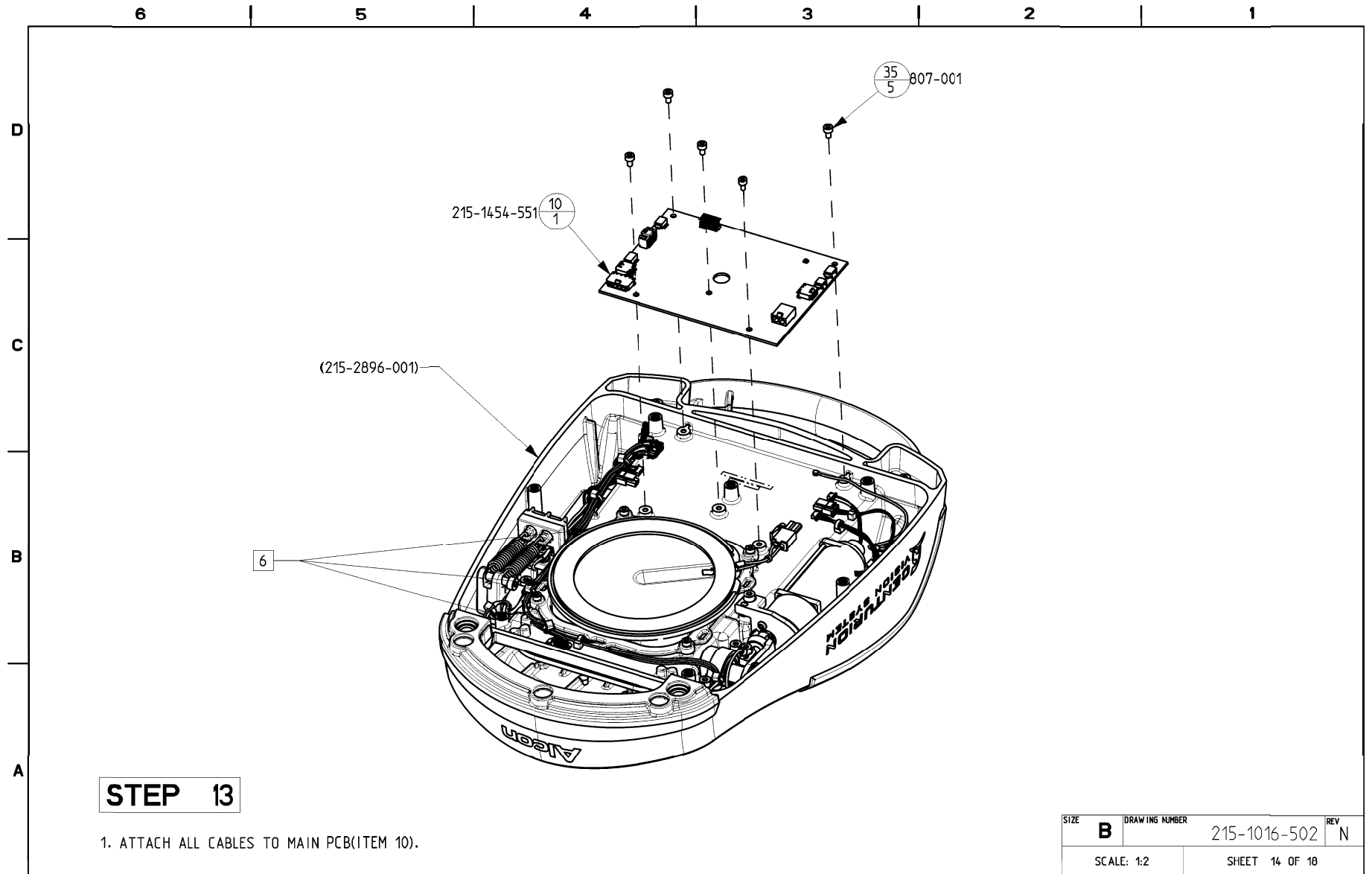


STEP 11

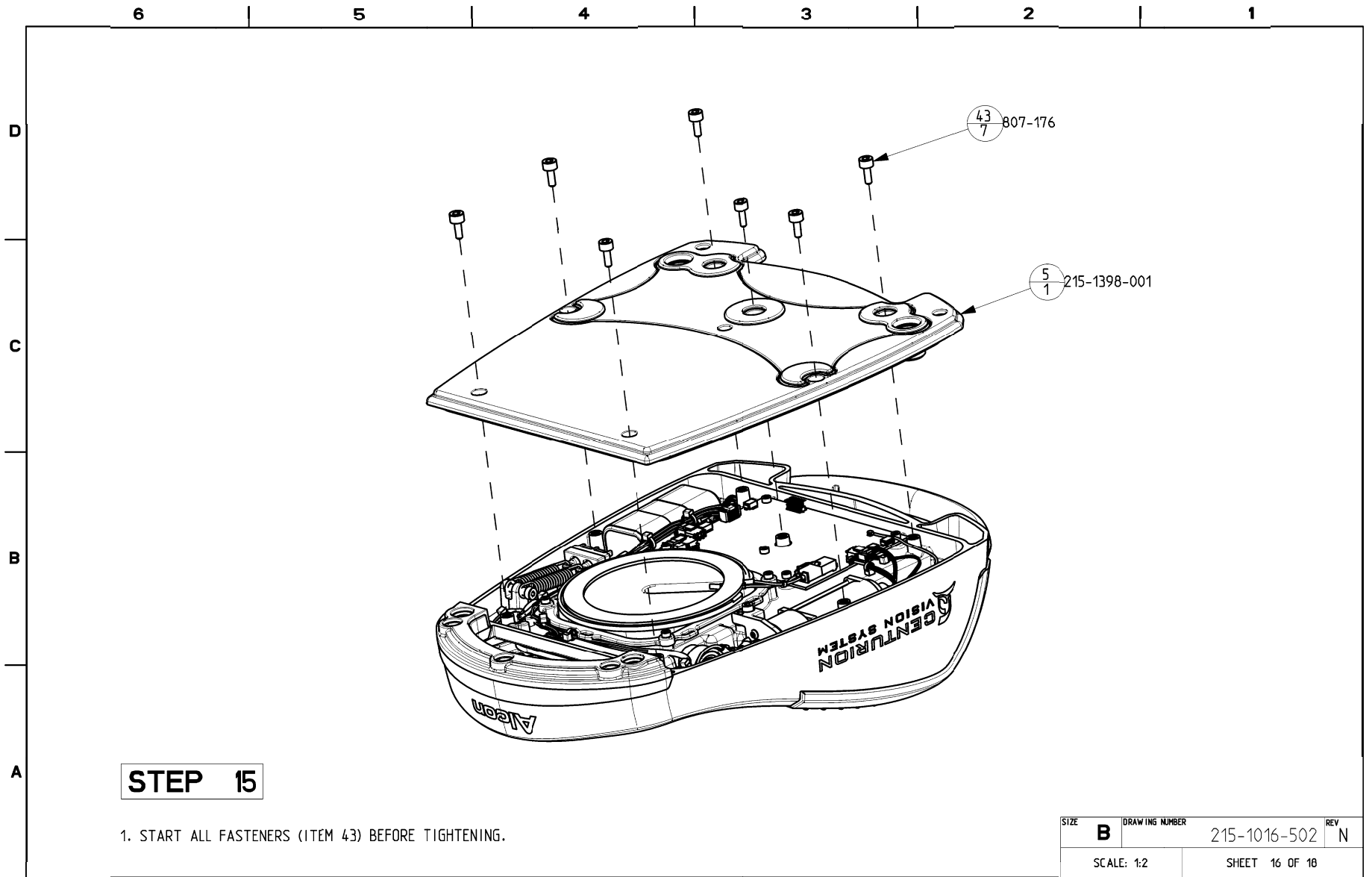
1. INSTALL BUMPERS TO TREADLE BEFORE INSTALLING TREADLE TO FOOTSWITCH.
- 2 ROTATE SPRINGS TO FULL TRAVEL, AND THEN TEMPORARILY INSERT FIXTURE 995-2150-643 BETWEEN SPRINGS TO FACILITATE TREADLE INSTALLATION. REMOVE FIXTURE ONCE FASTENERS ARE TIGHT.
3. START ALL FASTENERS IN AXLES.
- 4 APPLY OUTWARD PRESSURE TO ENSURE AXLES (ITEMS 14, 15) ARE SEATED FIRMLY IN BEARING WHILE TIGHTENING AXLE FASTENERS.
5. ALIGN GEARS TO MESH EVENLY, THEN TIGHTEN GEARS FASTENERS. SEE ALIGNMENT DETAILS.

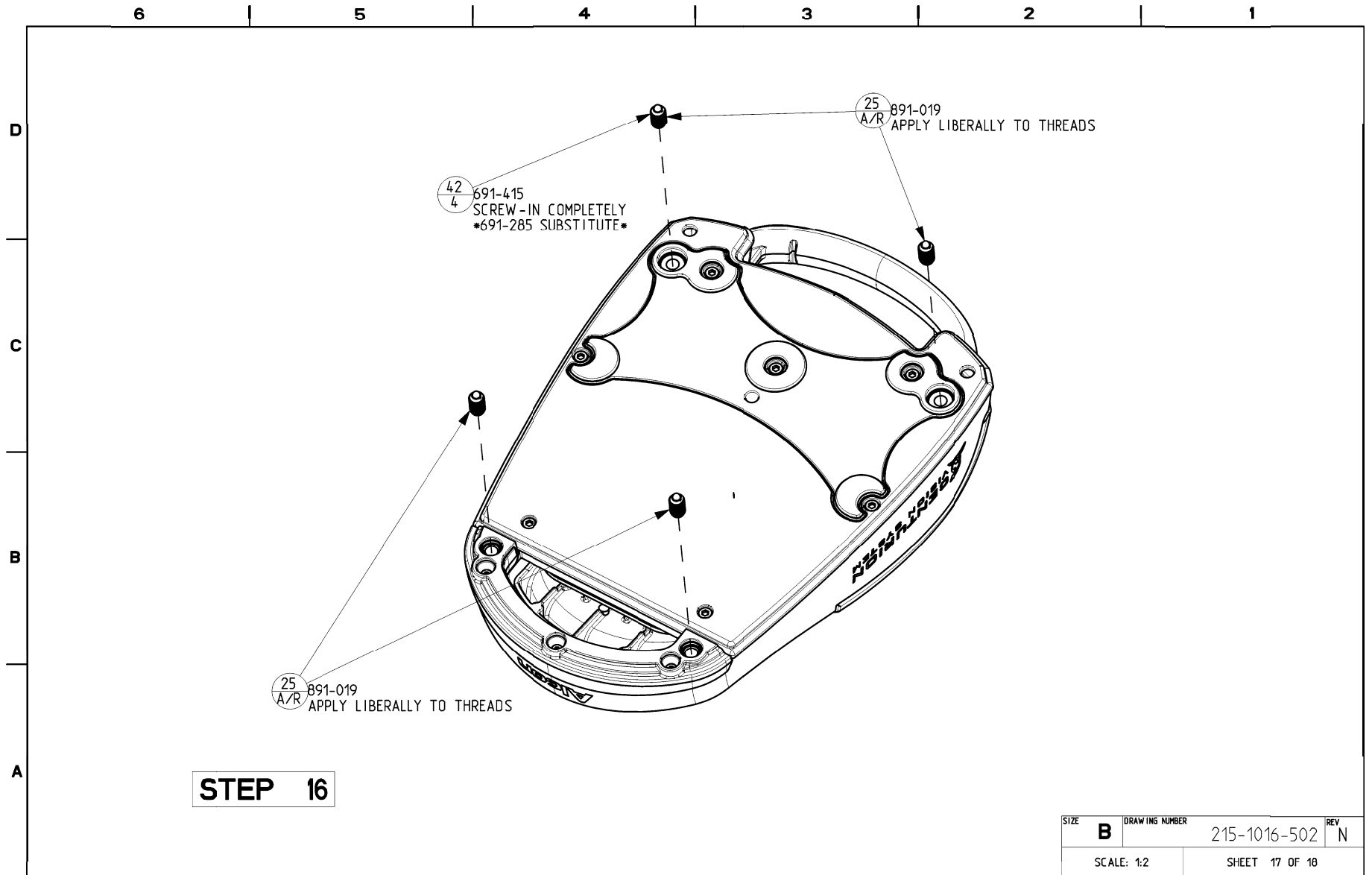
SIZE	DRAWING NUMBER	REV
B	215-1016-502	N
SCALE: 1:2		SHEET 12 OF 10

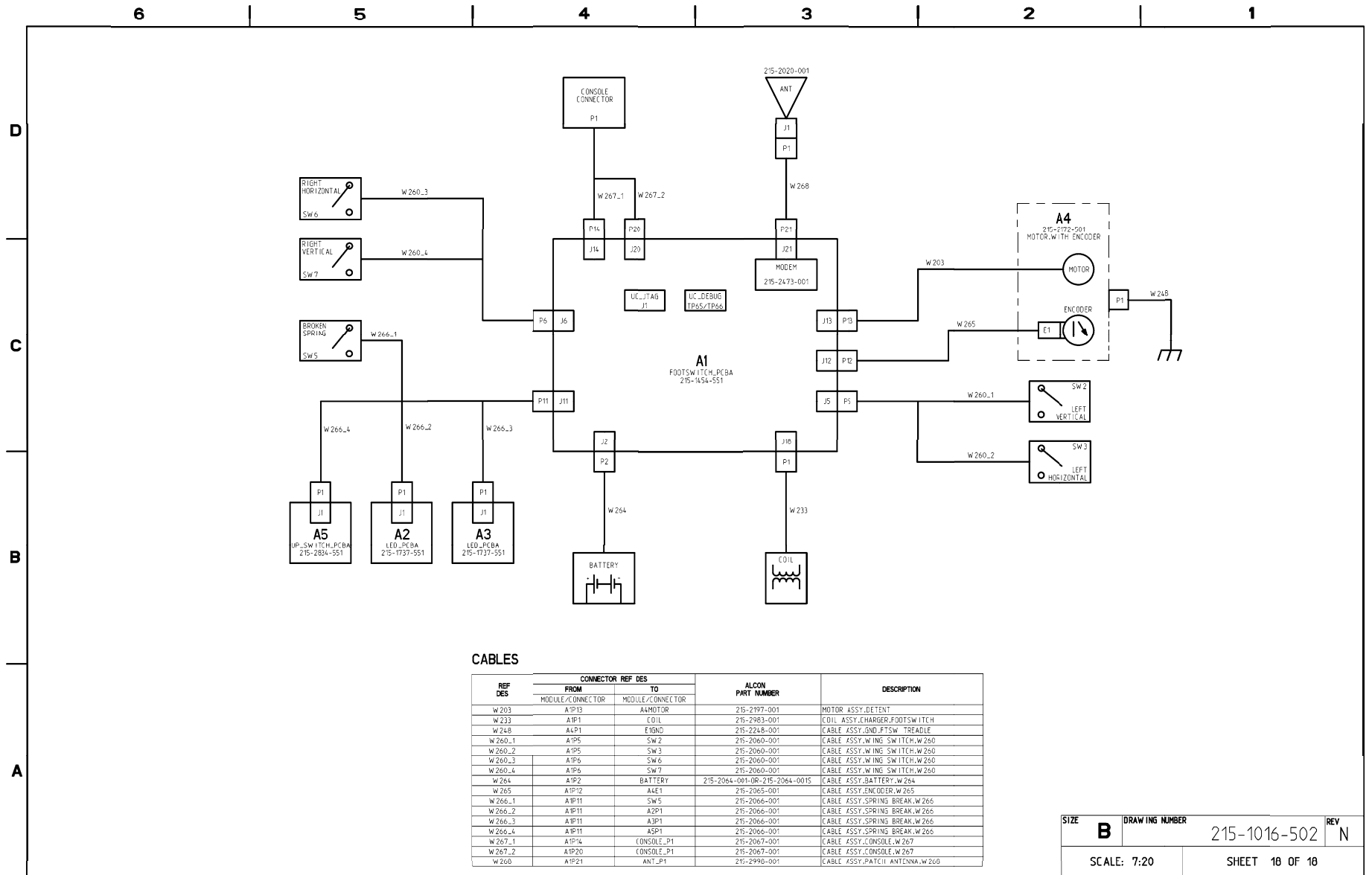


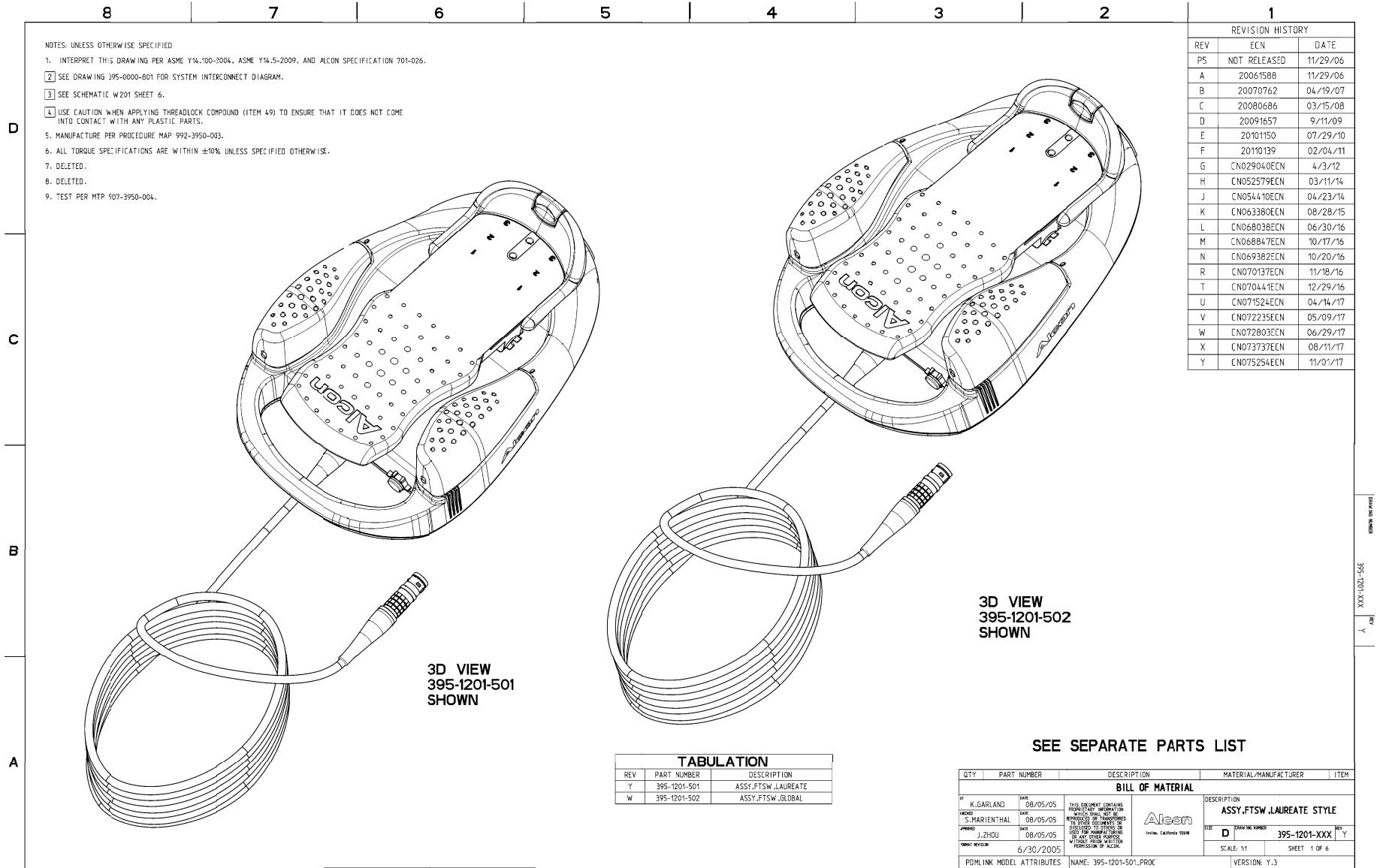


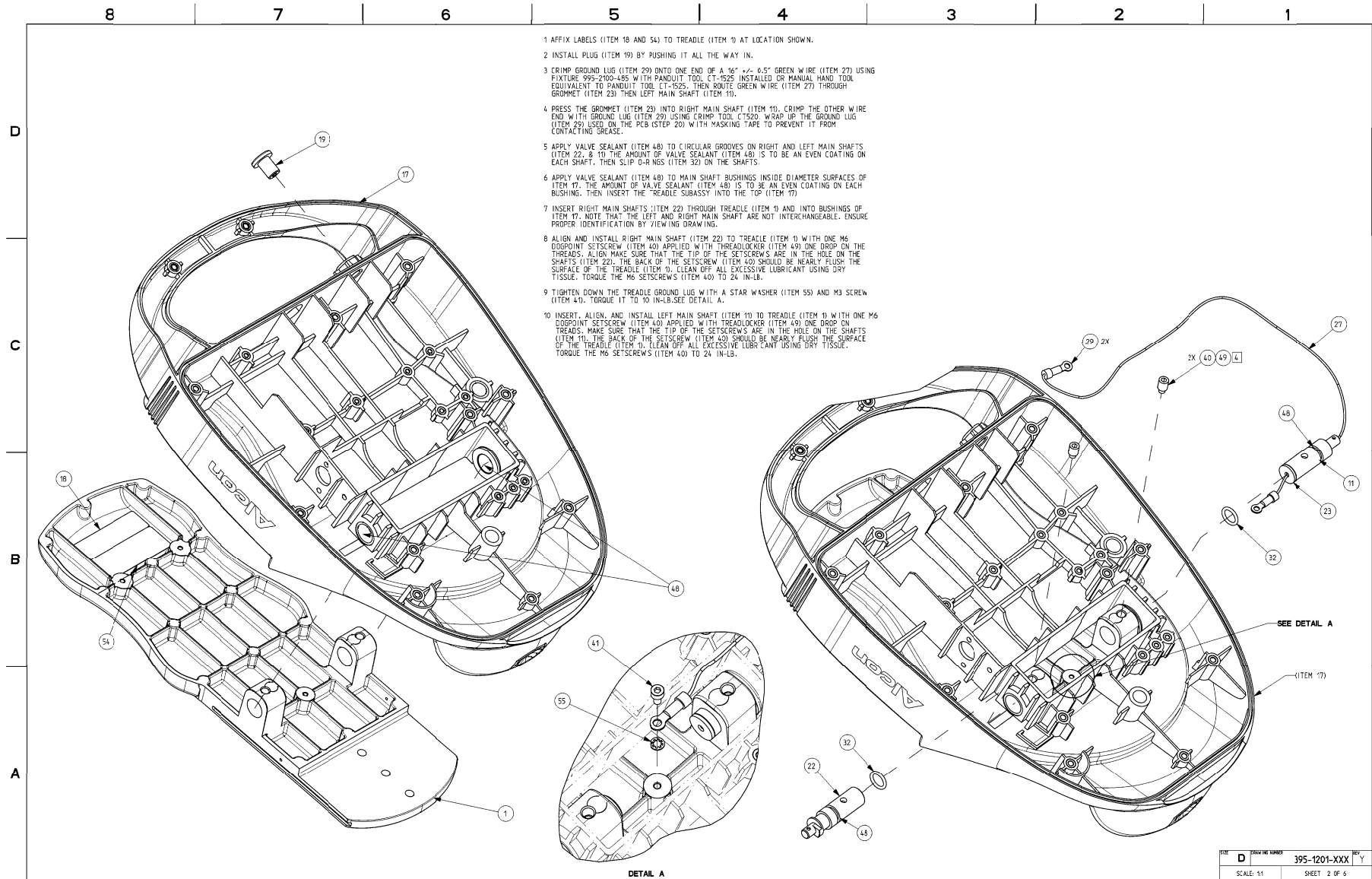


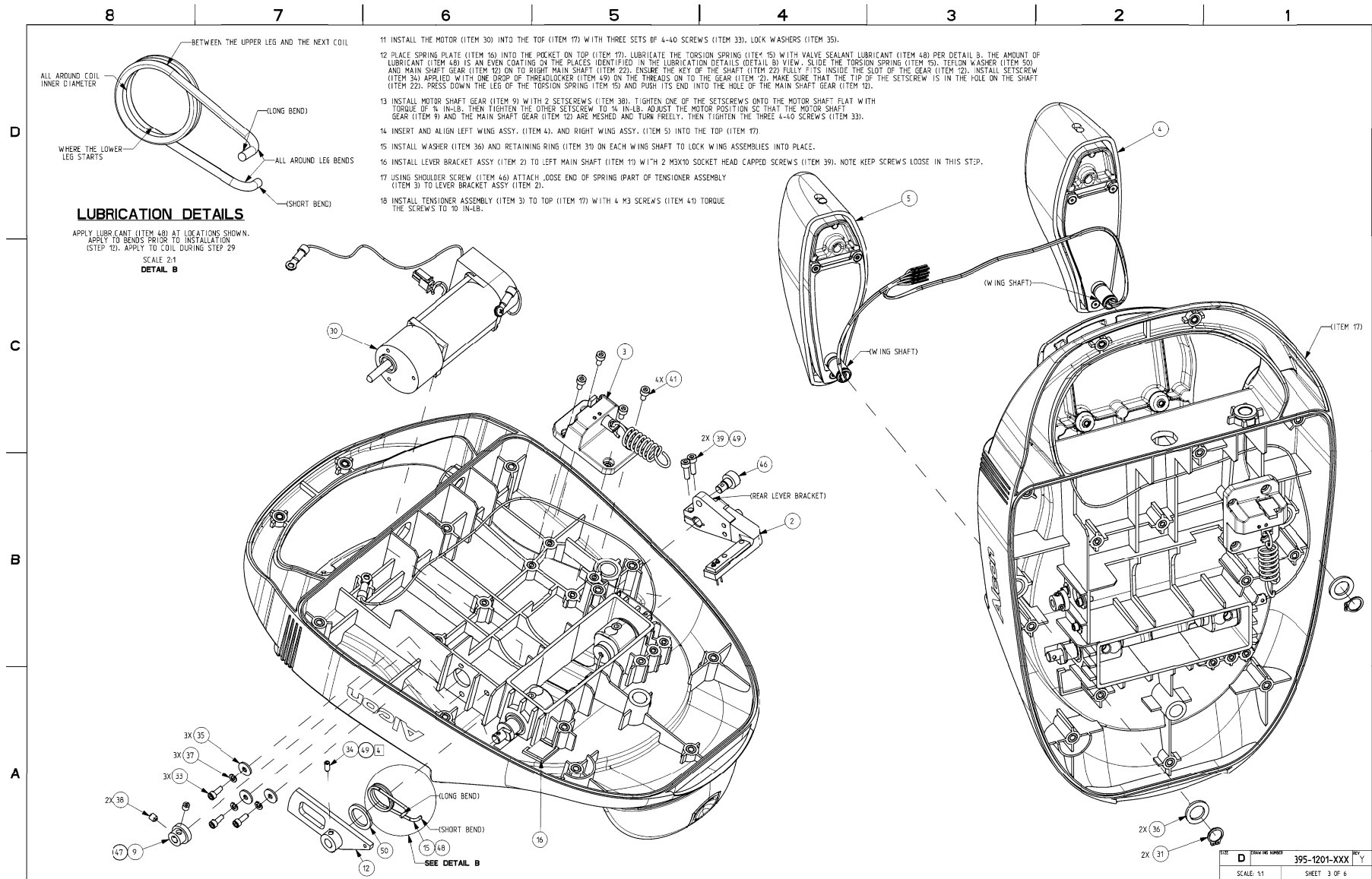












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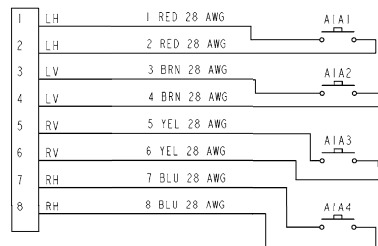
2

1

SCHEMATIC W201

2

A1J3



D

C

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19. INSTALL CABLE (ITEM 24) INTO TOP (ITEM 17) USING TORQUE WRENCH ADAPTER 1995-3950-0761 TO TIGHTEN THE CABLE FEED THROUGH NUT TO 18 IN.-LB. DUE TO CLEARANCE LIMITATIONS, THE ADAPTER CAN ONLY BE TURNED 60 DEGREES AT A TIME. BE CAREFUL NOT TO MISTAKE THE END OF ROTATION OF THE ADAPTER FOR THE END OF ROTATION OF THE NUT.

20. INSTALL PLB (ITEM 21) TO TOP (ITEM 17) WITH 3 M3 SCREWS (ITEM 51). TIGHT DOWN THE THREE GROUND LUGS FROM EXTERNAL CABLE, MOTOR, AND TREADLE TO THE PCB WITH ONE OF THE SCREWS AND STAR WASHER (ITEM 55). PLACE STAR WASHER BETWEEN TREADLE AND CABLE RING LUGS. SEE DETAIL C. TORQUE TO 10 IN.-LB.

21. CONNECT ALL CONNECTORS TO PCB (ITEM 21; A1J4 TO J4, A1J1 TO J1, A1J3 TO J3, A1J2 TO J2, AND A1J5 TO J5, AND MOTOR ENCODER (ITEM 30).

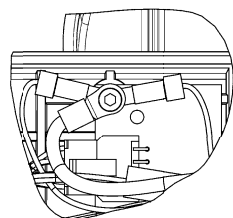
22. INSERT THE CRIMP TERMINALS OF THE WIRING INTO CONNECTOR (ITEM 28) PER FOOTSWITCH SCHEMATIC.

23. SOLDER THE TWO OPEN WIRE LEADS OF THE INTERNAL CABLE ASSY (ITEM 25) TO THE CONTACT BRACKETS (ITEM 13 & 14) AT THE GROOVES. BROWN WIRE TO SPALLER BRACKET, YELLOW WIRE TO BIGGER BRACKET. NO SOLDER AND/OR WIRES ARE ALLOWED TO PROTRUDE ABOVE THE GROOVES AND NO EXPOSED WIRE LEADS ARE ALLOWED OUTSIDE THE GROOVES.

24. INSTALL CONTACT BRACKETS (ITEM 13 & 14) INTO TOP (ITEM 17) WITH 3 M3 SCREWS (ITEM 42). HOLD THE BRACKETS AGAINST THE BACK WALL OR RIBS WHILE TORQUING THE SCREWS TO 10 IN.-LB.

25. TEST MICROSWITCH BY PLACING THE LEADS OF AN OHM METER ONTO THE CONTACTS WITH THE WIRES IN ANY POLARITY AND VERIFYING CONTINUITY BY PRESSING THE MICROSWITCH ARM. DATA SHEET ENTRY.

26. INSTALL MICROSWITCH FROM INTERNAL CABLE ASSEMBLY (ITEM 25) AND INSULATION SHEET (ITEM 10) ONTO TENSIONER BRACKET WITH 2 M2 SCREWS (ITEM 43). THE WIDER SIDE OF THE INSULATION SHEET (ITEM 10) MEASURED FROM THE HOLES SHOULD BE POSITIONED TOWARD THE TENSION SPRING.



SCALE: 2:1
DETAIL C

(FEED THROUGH NUT)

(28) A1J3

SEE DETAIL C

(MICROSWITCH)

(BROWN WIRE)

(YELLOW WIRE)

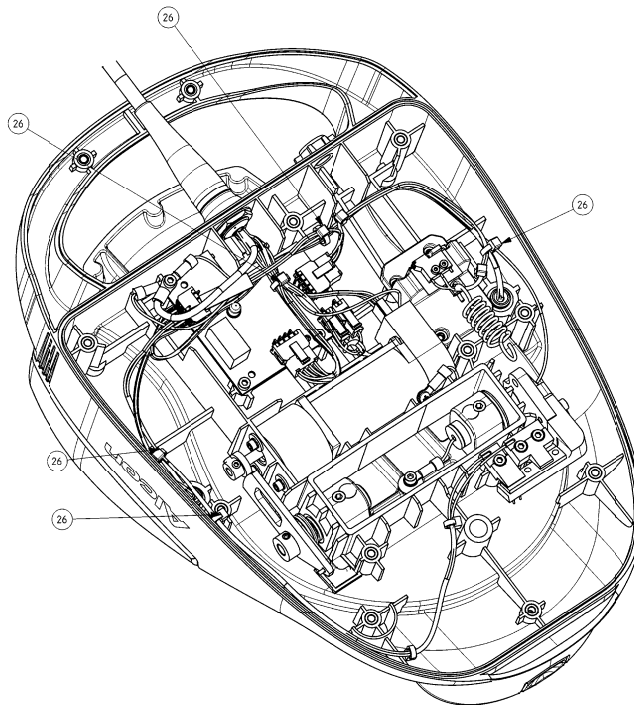
8 7 6 5 4 3 2 1

D

C

B

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27 USE TIE WRAPS (ITEM 26) TO NEATLY GROUP BUNDLES OF WIRES TOGETHER UNIFORMLY. ROUTE ALL CABLES AND WIRES PER DRAWING VIEWS SHOWN IN THIS DOCUMENT. ENSURE THERE IS ENOUGH EXCESS WIRE IN LOCATIONS REQUIRING PART MOVEMENT. CHECK THAT NO WIRES ARE IN LOCATIONS THAT WOULD INTERFERE WITH FASTENER BOSSES OR OTHER MOVING PARTS SUCH AS GEARS OR SPRINGS.

28 MARK A1/1 ON THE 8 PIN MOLEX CONNECTOR OF THE EXTERNAL CABLE. MARK A1/2 ON MICROSWITCH CONNECTOR MARK A1/3 ON CONNECTOR (ITEM 28). MARK A1/4 ON THE 2 PIN MOLEX CONNECTOR OF THE CABLE AND MARK A1/5 ON MOTOR LEADS CONNECTOR.

29 APPLY LUBRICANT (ITEM 48) TO THE END OF TENSION SPRING WHERE IT HOOKS ON THE SHOULDER SCREW (ITEM 46). SEE DETAIL B. ADD GREASE (ITEM 47) TO THE TEETH OF THE MOTOR AND MAINSHAFT GEARS (ITEM 9 AND 10).

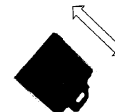
30 PLACE THE SHIM (MCMASTER-CARR STAINLESS STEEL SLOTTED SHIM WITH TAB, TRADE SIZE B, .020" THICK +/- 0.0005", 3" LONG X 3" WIDE, MCMASTER-CARR P/N 94420A242) UNDER THE LOWER END OF TREADLE (ITEM 1). THE SPACER SHOULD BE POSITIONED AT CENTER LINE OF THE TREADLE WITH ONE END TOUCH ITS INSIDE SHOULDER.

31 ROTATE THE FRONT LEVER ASSY FULLY ASSEMBLED TO MAKE CONTACT WITH STATIONARY CONTACT BRACKETS (ITEMS 13 & 14).

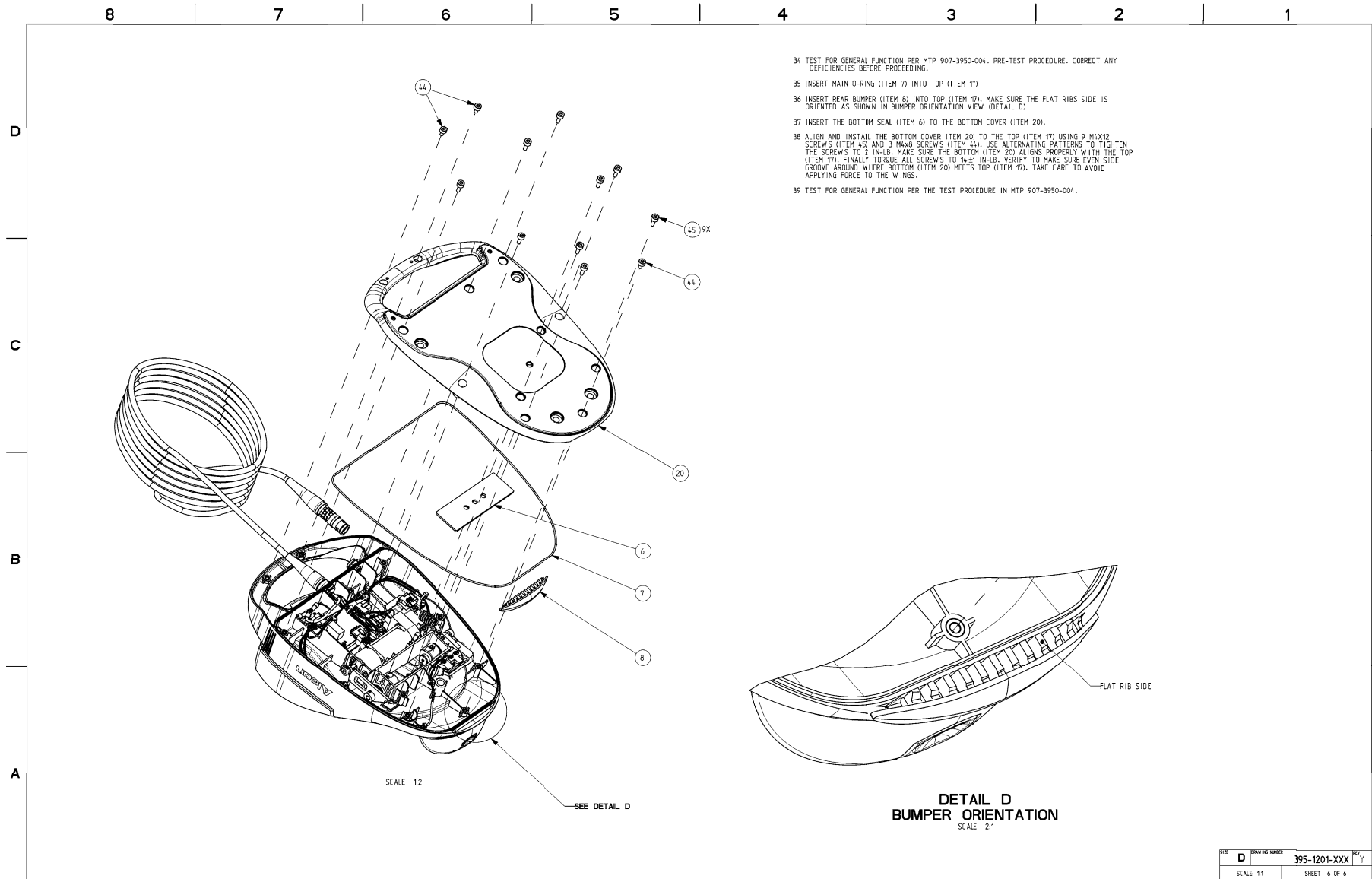
32 CHECK TO VERIFY ELECTRICAL CONDUCTIVITY BETWEEN THE STATIONARY CONTACT BRACKETS (ITEM 13, & 14). REPEAT STEP 23 TO ADJUST IF NOT. ENSURE FTSW IS IN UPRIGHT POSITION DURING THE ELECTRICAL CONDUCTIVITY CHECK AND NOT UPSIDE DOWN. THE "FS UP" LED IS OFF WHEN ELECTRICAL CONDUCTIVITY IS ESTABLISHED.

33 REMOVE THE SHIM UNDER THE LOWER END OF TREADLE (ITEM 1).

SHIM USED FOR STEPS
30-33. REMOVE AFTER USE



SIZE	D	DRAWING NUMBER	395-1201-XXX	REV	Y
SCALE	1:1	SHEET	5 OF 6		



6

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
3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.100-2004, ASME Y14.5-2009, AND ALCON SPECIFICATION 701-026..

2.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.

3. PART NUMBER, SERIAL NUMBER AND REVISION LETTER MARKING.

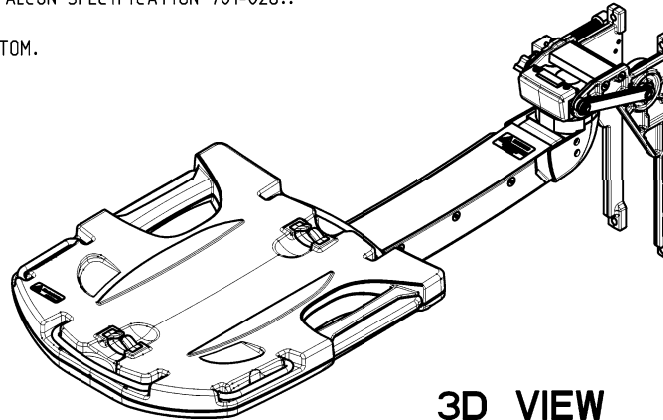
4. ASSEMBLE PER MAP 992-2150-004.

5. ACCEPTABLE TO USE FIXTURE 995-2150-267 AS ASSEMBLY AID.

6. REFERENCE GREASE JOB AID 955-1460-003 FOR PROPER AMOUNT AND LOCATION(S) OF GREASE TO APPLY.

7. -502S: TEST PER MTP 907-2150-022, FIELD SERVICE TEST MATRIX.

8. 215-1091-502S IS MADE FROM ONE 215-1091-502



3D VIEW


REVISION HISTORY

REV	ECN	DATE
P21	NOT RELEASED	07/03/13
A	CN045937ECN	07/23/13
B	CN047065ECN	08/15/13
C	CN049086ECN	10/11/13
D	CN052000ECN	01/30/14
E	CN059874ECN	02/02/15
F	CN066065ECN	03/16/16
G	CN070739ECN	04/07/17

TABULATION

PART NUMBER	REV	DESCRIPTION	PART NUMBER	7	8	DESCRIPTION
215-1091-502	G	ASSY,TRAY ARM	215-1091-502S			ASSY,TRAY ARM,SERVICE

SEE SEPARATE PARTS LIST

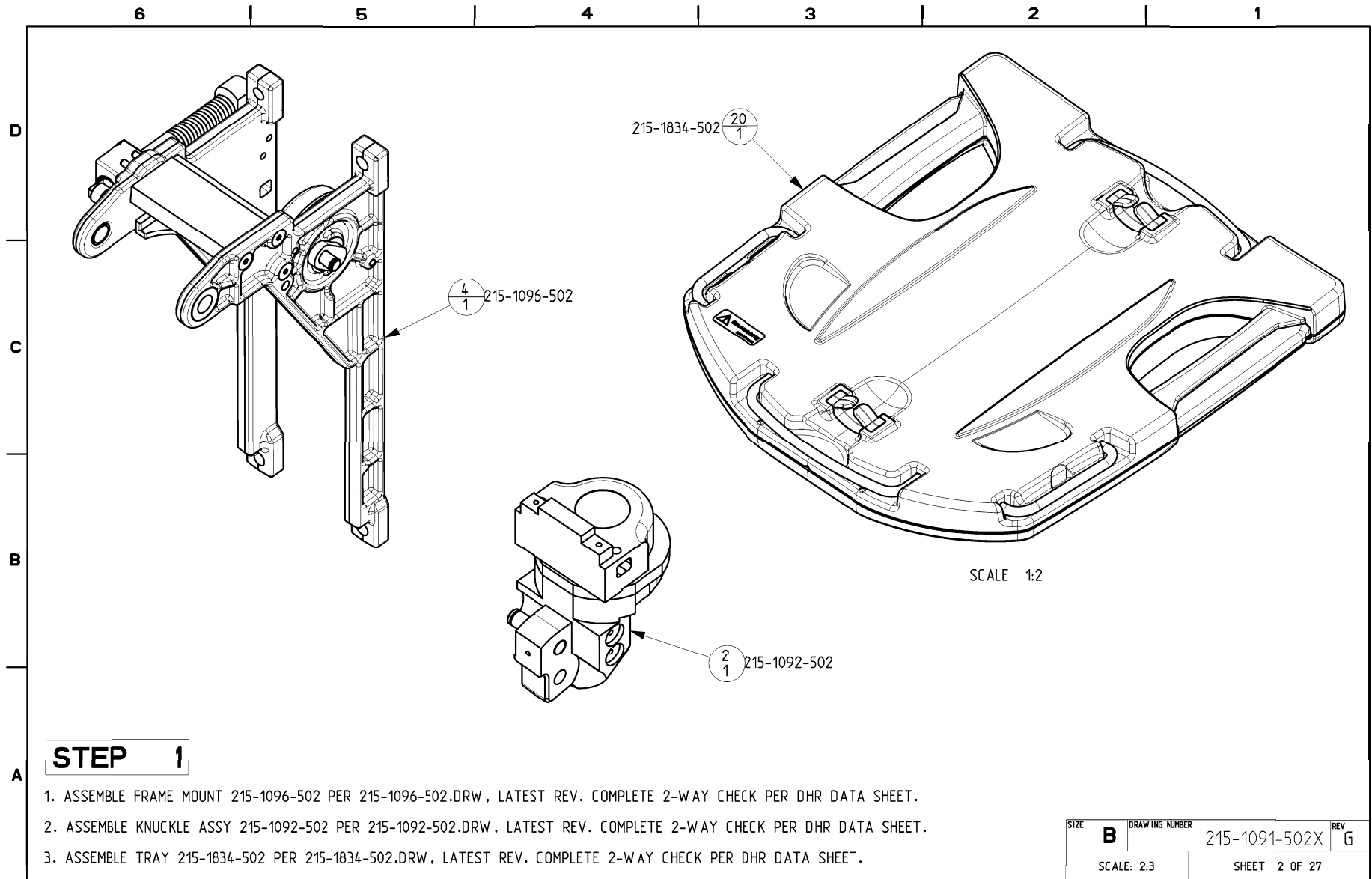
QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	MDELGADO	DATE	07/03/13	<div>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.</div> 
CHECKED	J.ATHERLEY	DATE	07/03/13	
APPROVED	D.KASTELIC	DATE	07/03/13	
FORMAT REVISION		2/23/2007		
PDMLINK MODEL ATTRIBUTES		NAME: 215-1091-502_PROC		VERSION: G.3

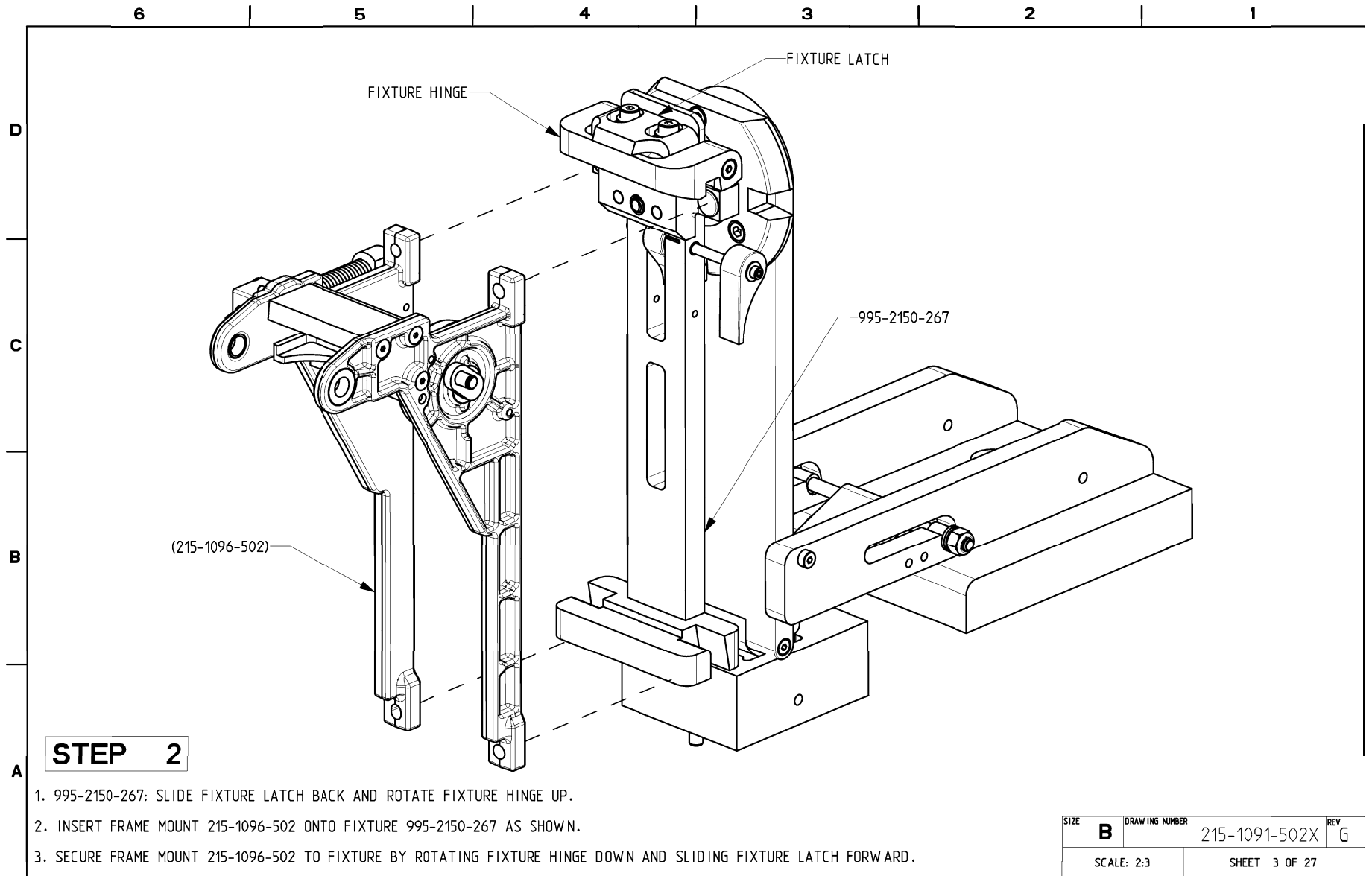
DESCRIPTION			
ASSY,TRAY ARM			
SIZE	B	DRAWING NUMBER	215-1091-502X
REV	G	SCALE: 1:4	SHEET 1 OF 27

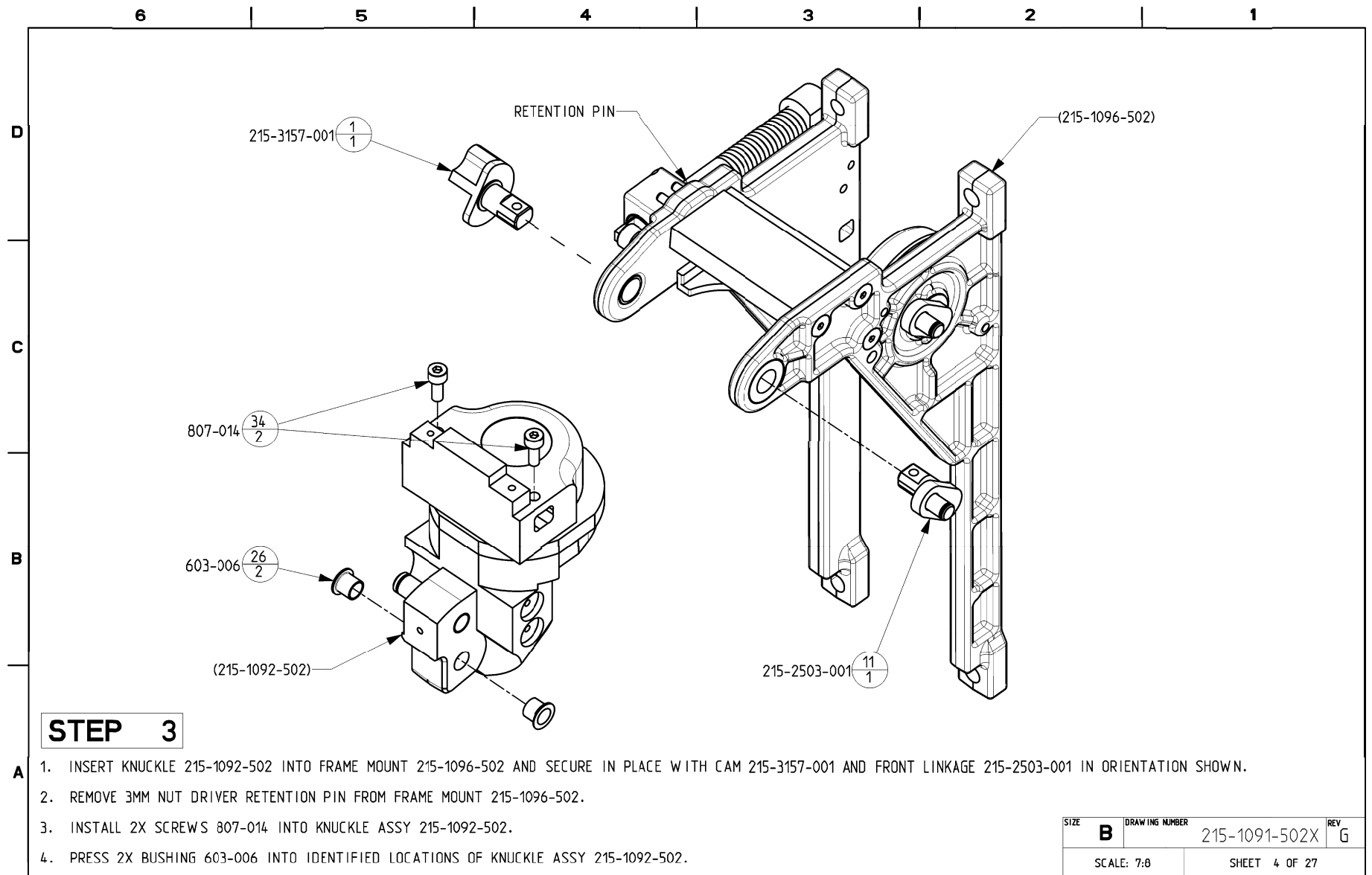
DRAWING NUMBER

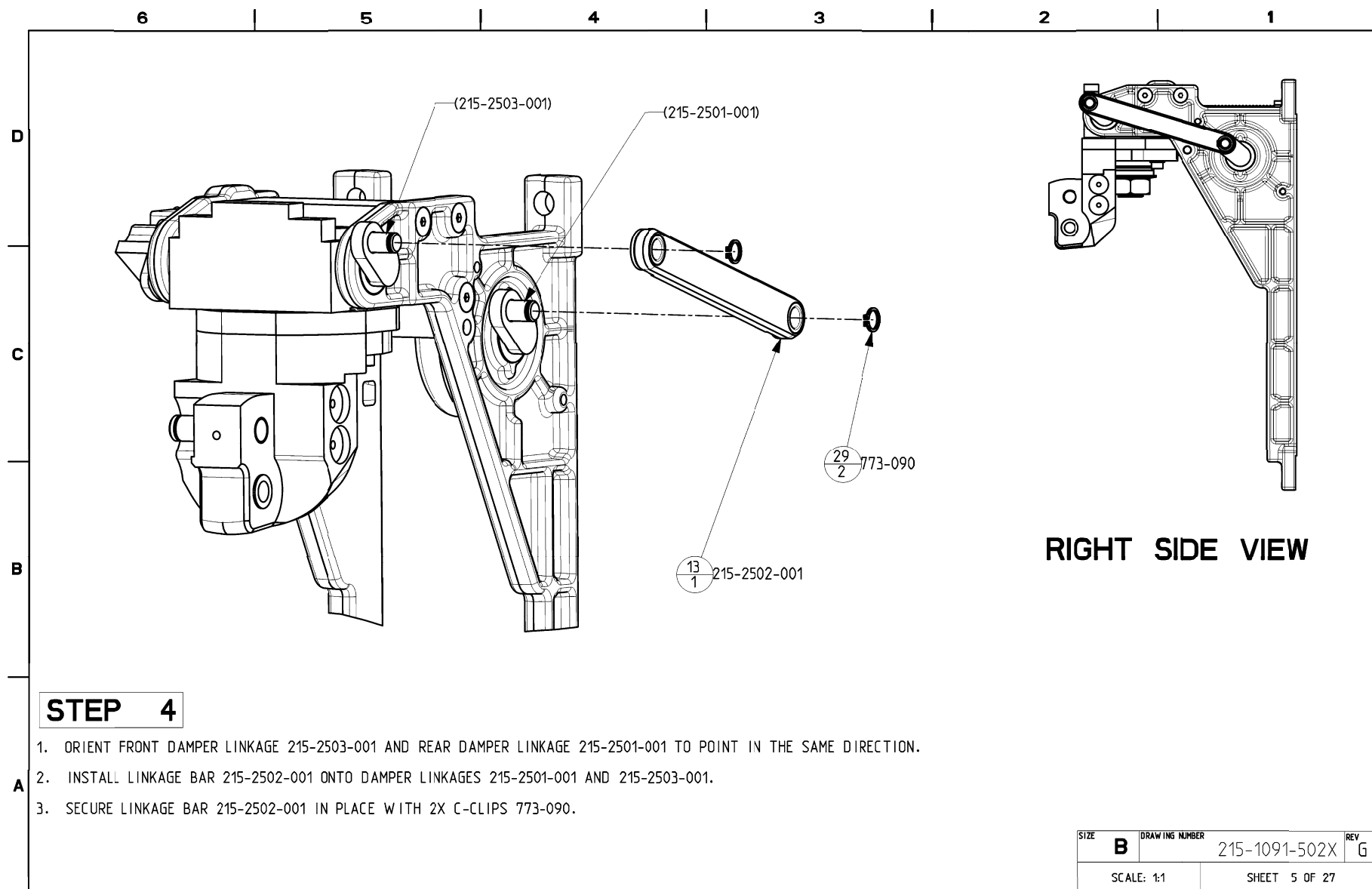
215-1091-502X

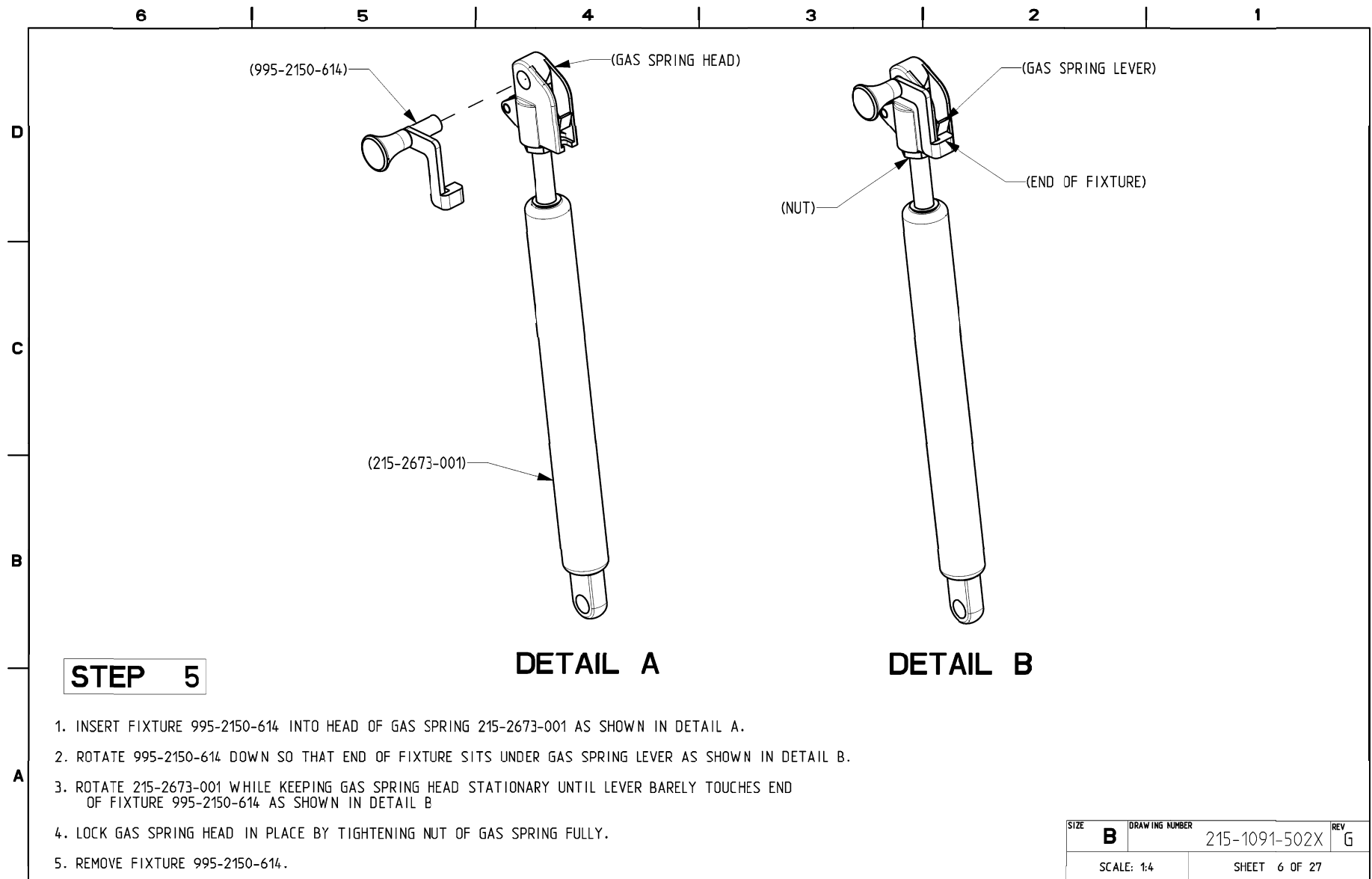
REV G









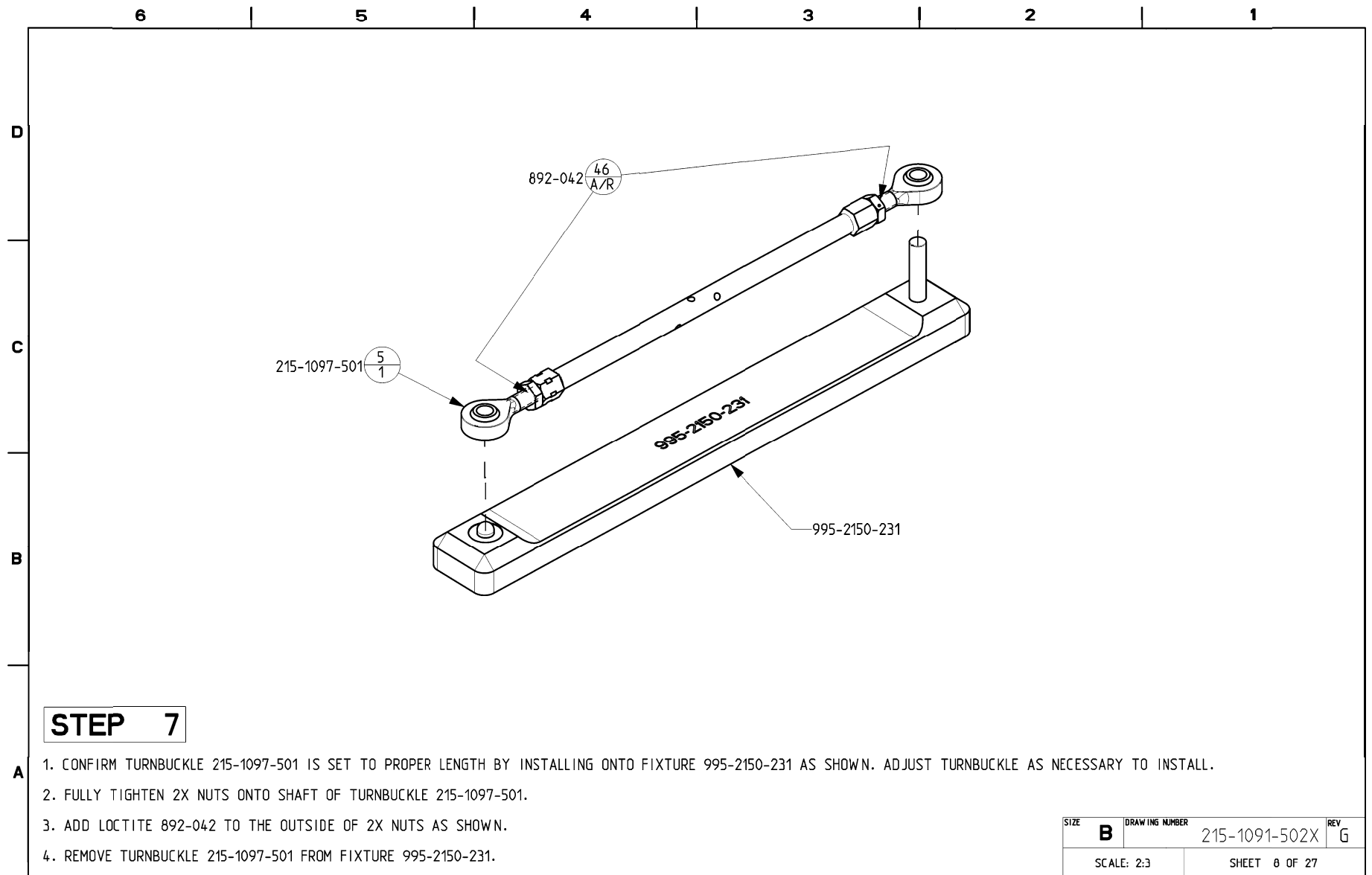


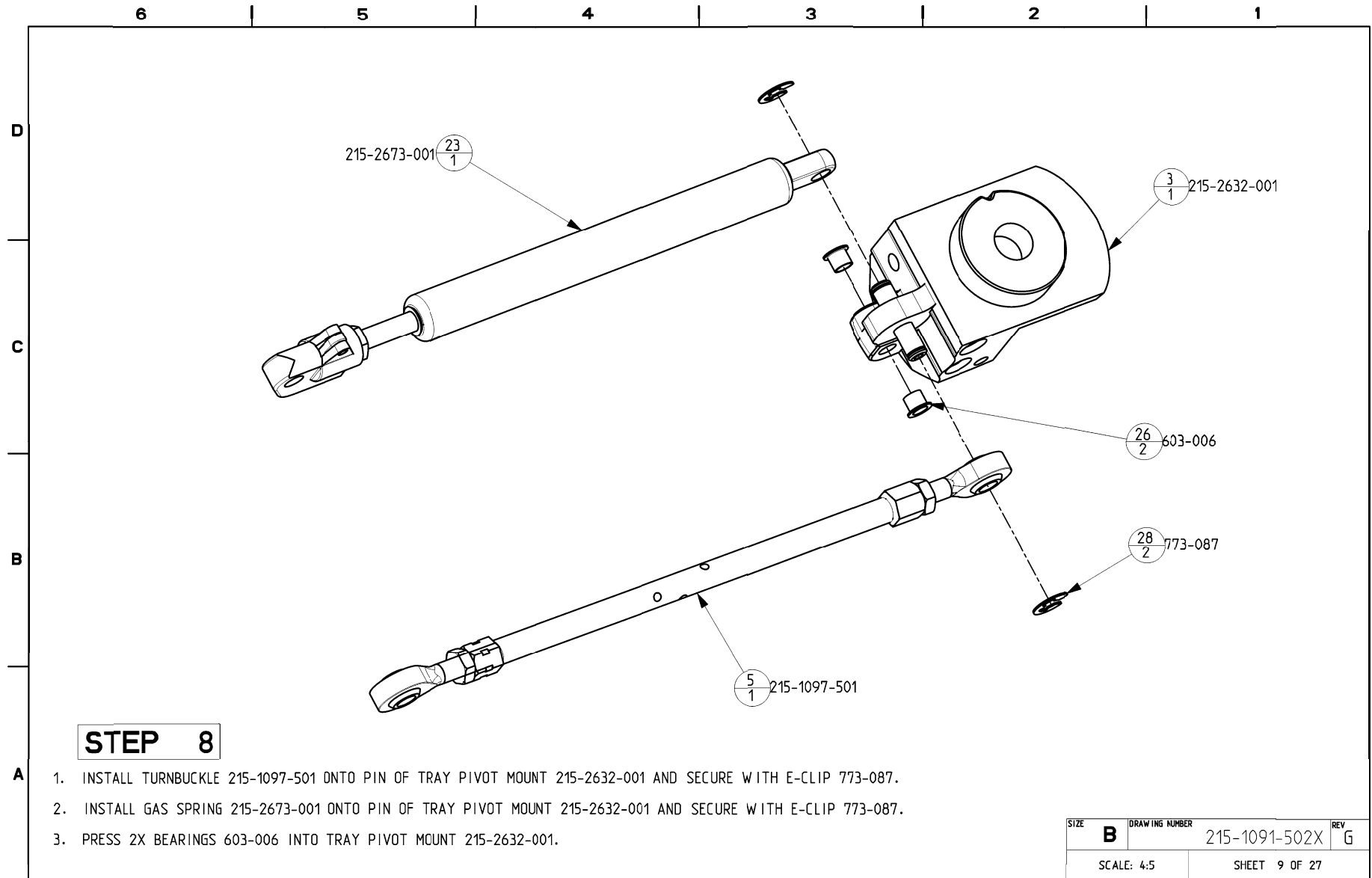


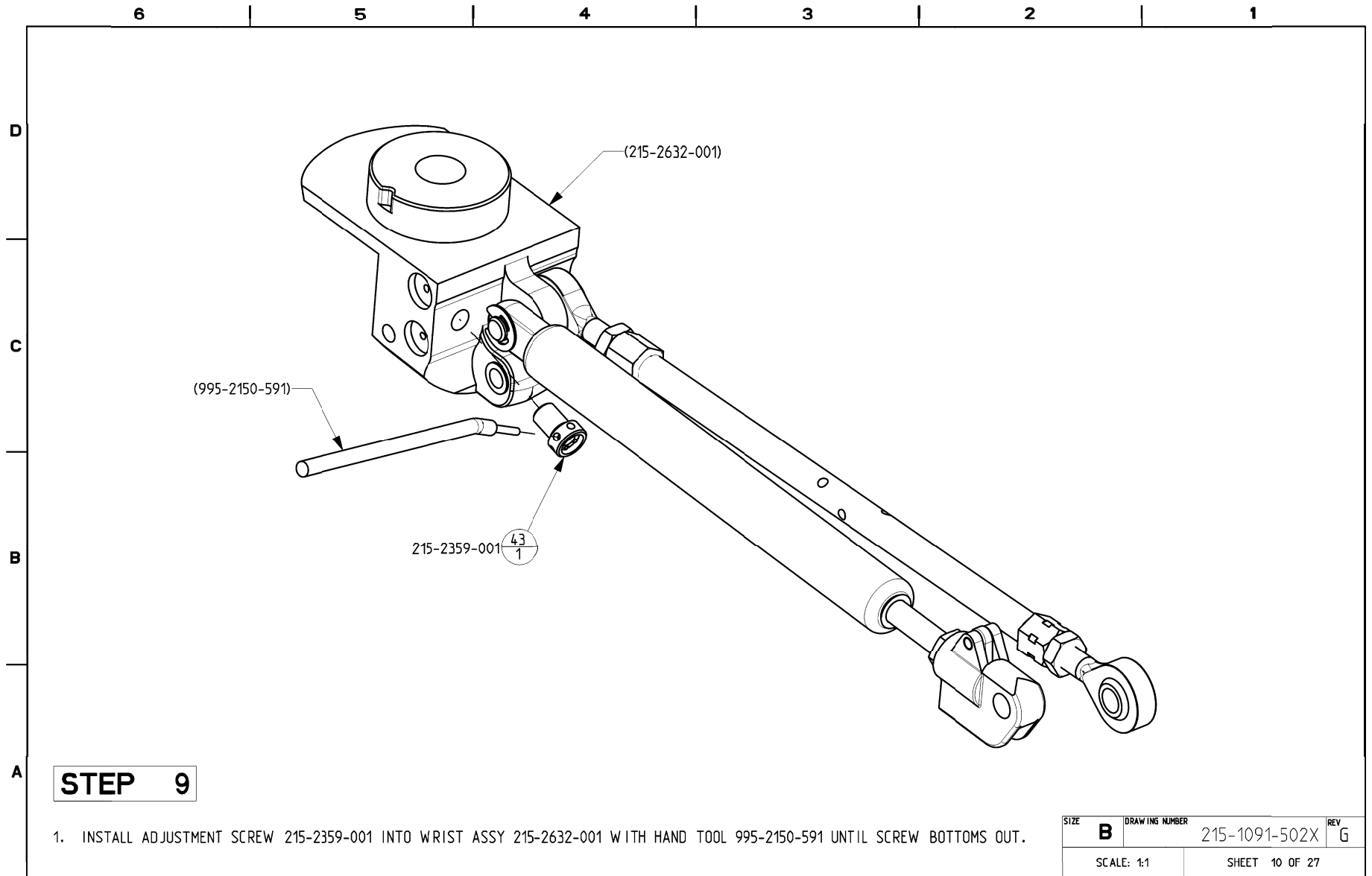
A

4. REMOVE GAS SPRING 215-2673-001 FROM FIXTURE.

SIZE B	DRAWING NUMBER 215-1091-502X	REV G
SCALE: 1:2		SHEET 7 OF 27

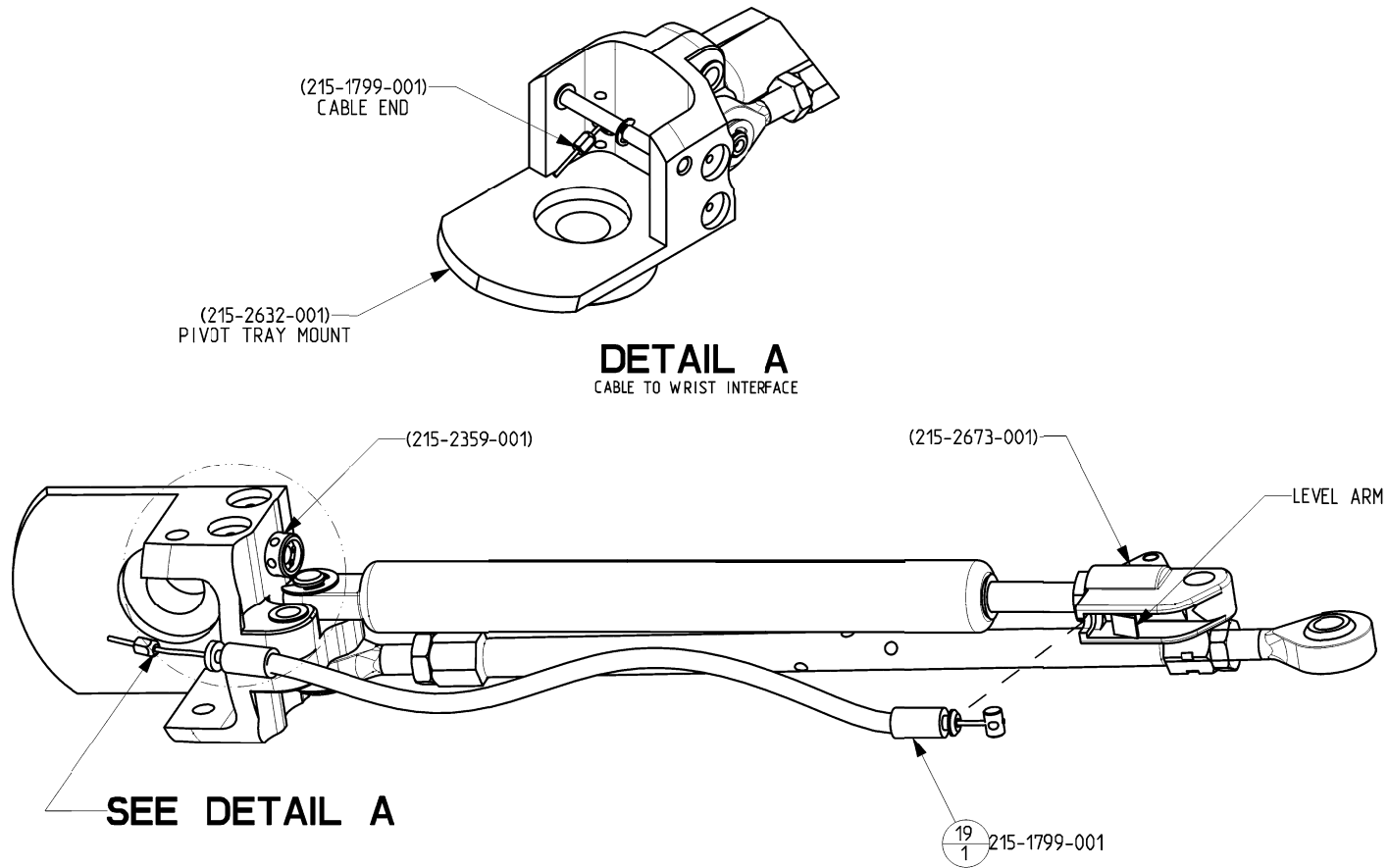






6 | 5 | 4 | 3 | 2 | 1

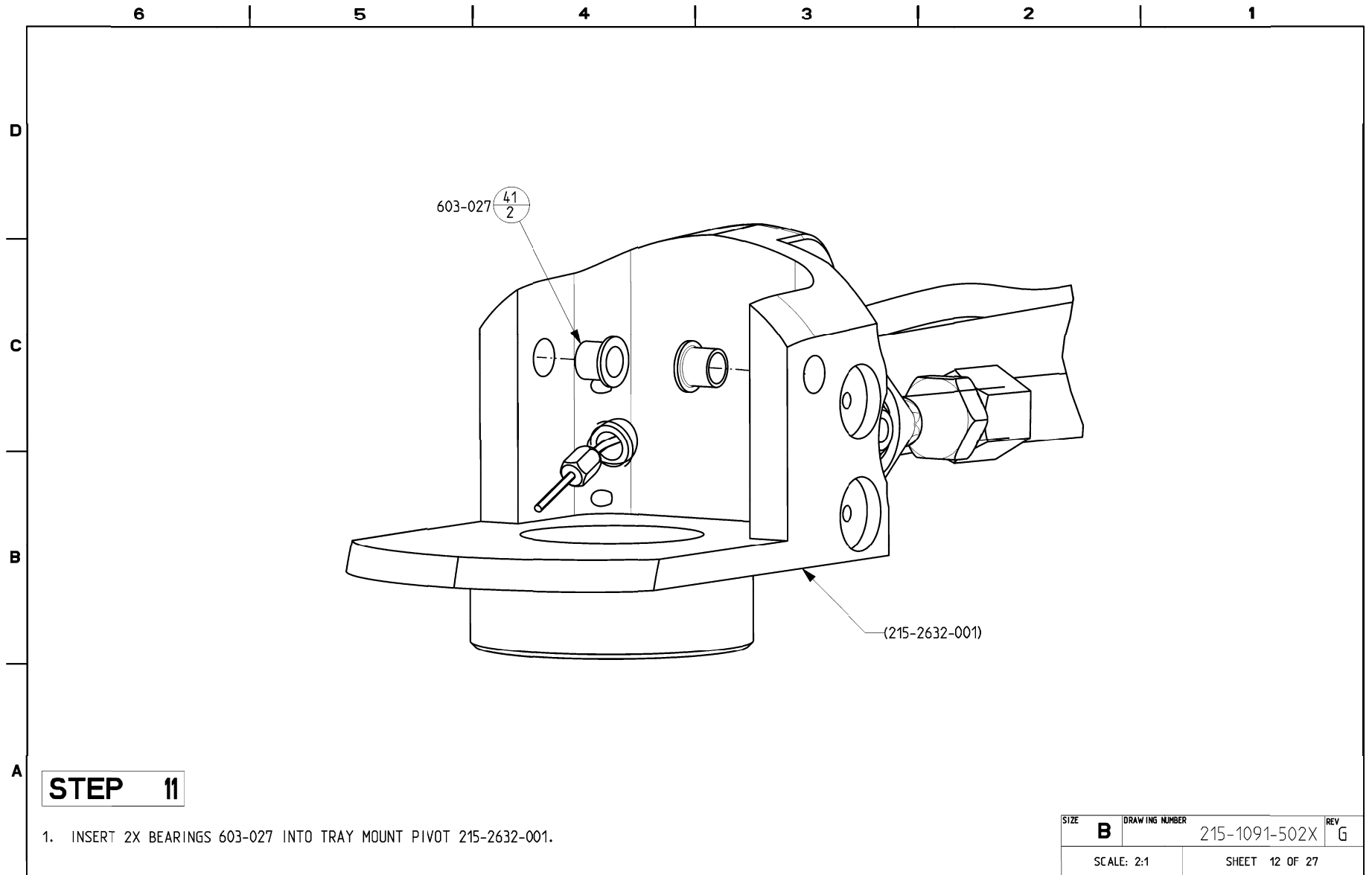
D
C
B
A



STEP 10

1. HOOK END OF BRAKE CABLE 215-1799-001 INTO LEVEL ARM OF GAS SPRING 215-2673-001.
2. INSERT OTHER END OF BRAKE CABLE 215-1799-001 THROUGH HOLE OF SCREW 215-2359-001. SEE DETAIL A FOR DETAILS.

SIZE	DRAWING NUMBER	REV
B	215-1091-502X	G
SCALE: 3:5		SHEET 11 OF 27



6

5

4

3

2

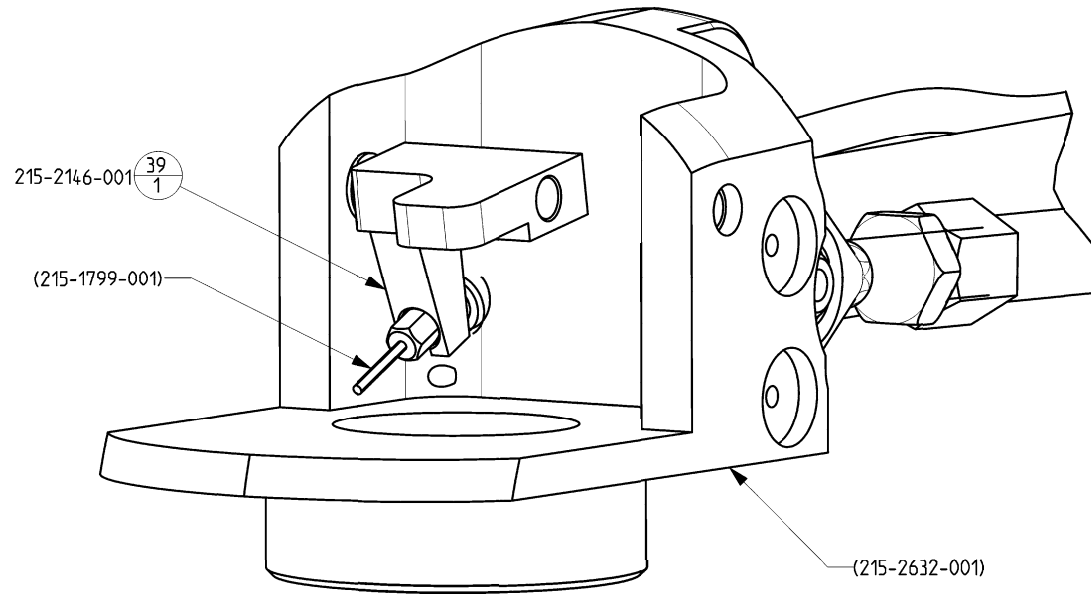
1

D

C

B

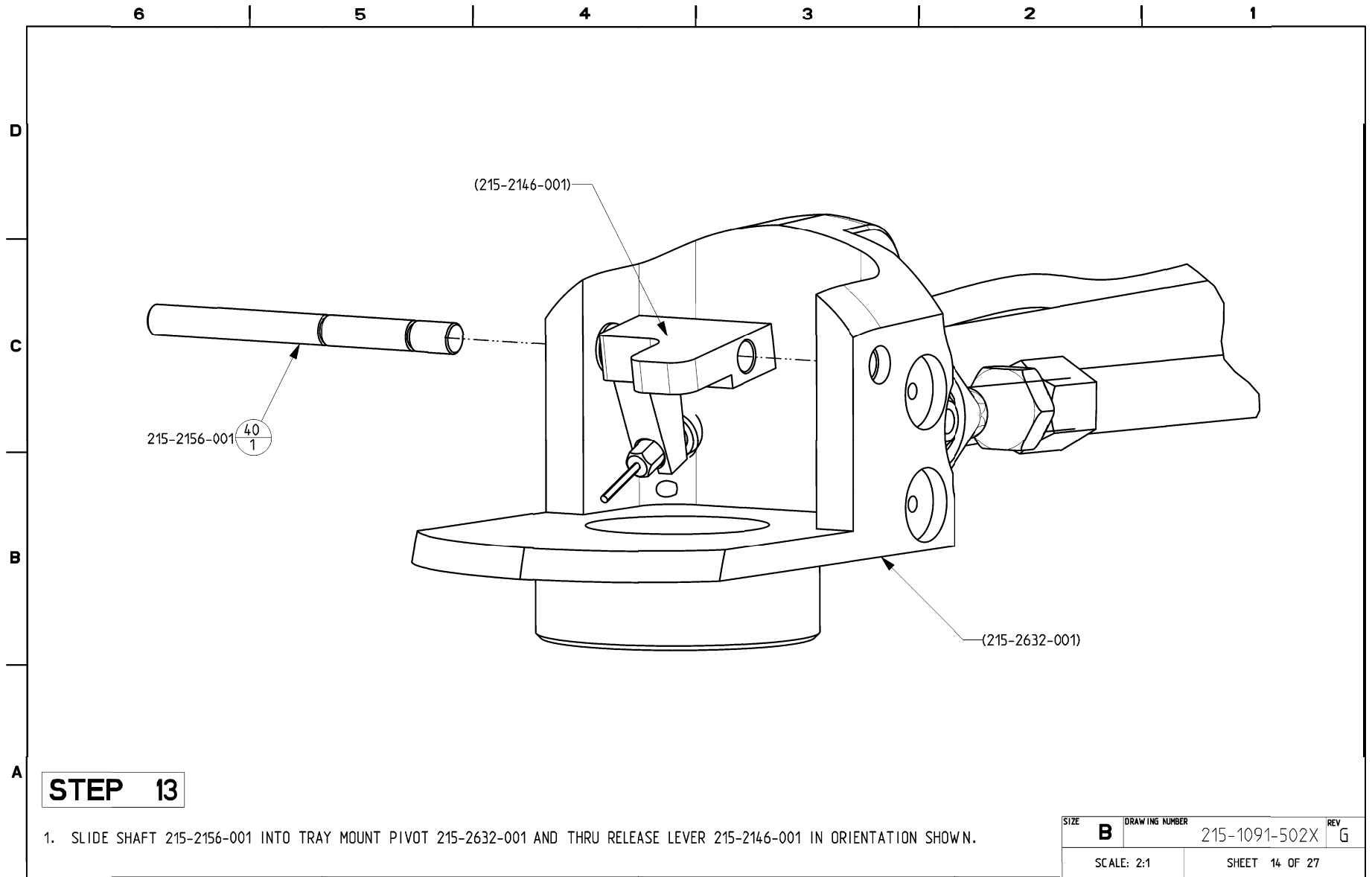
A

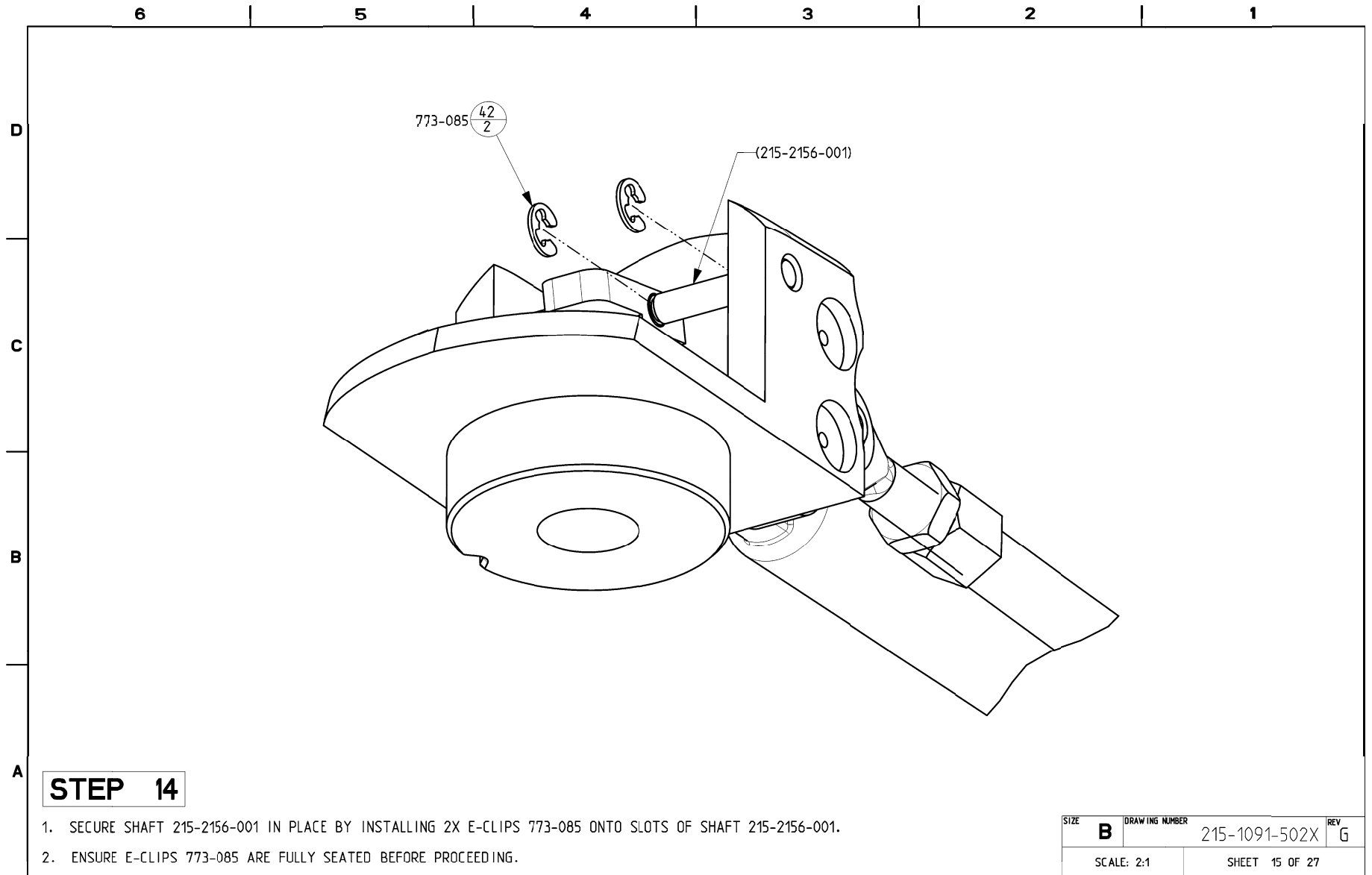


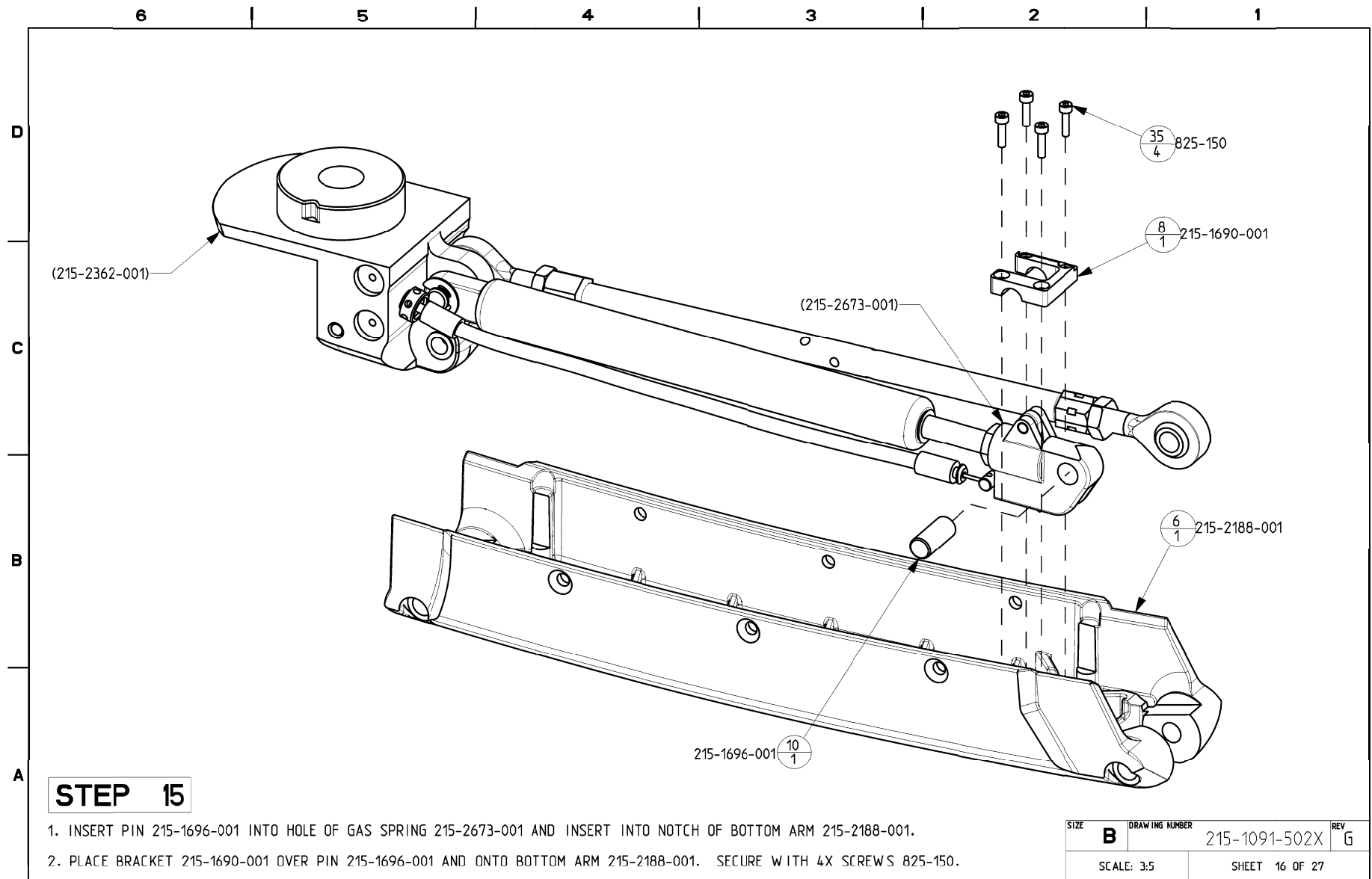
STEP 12

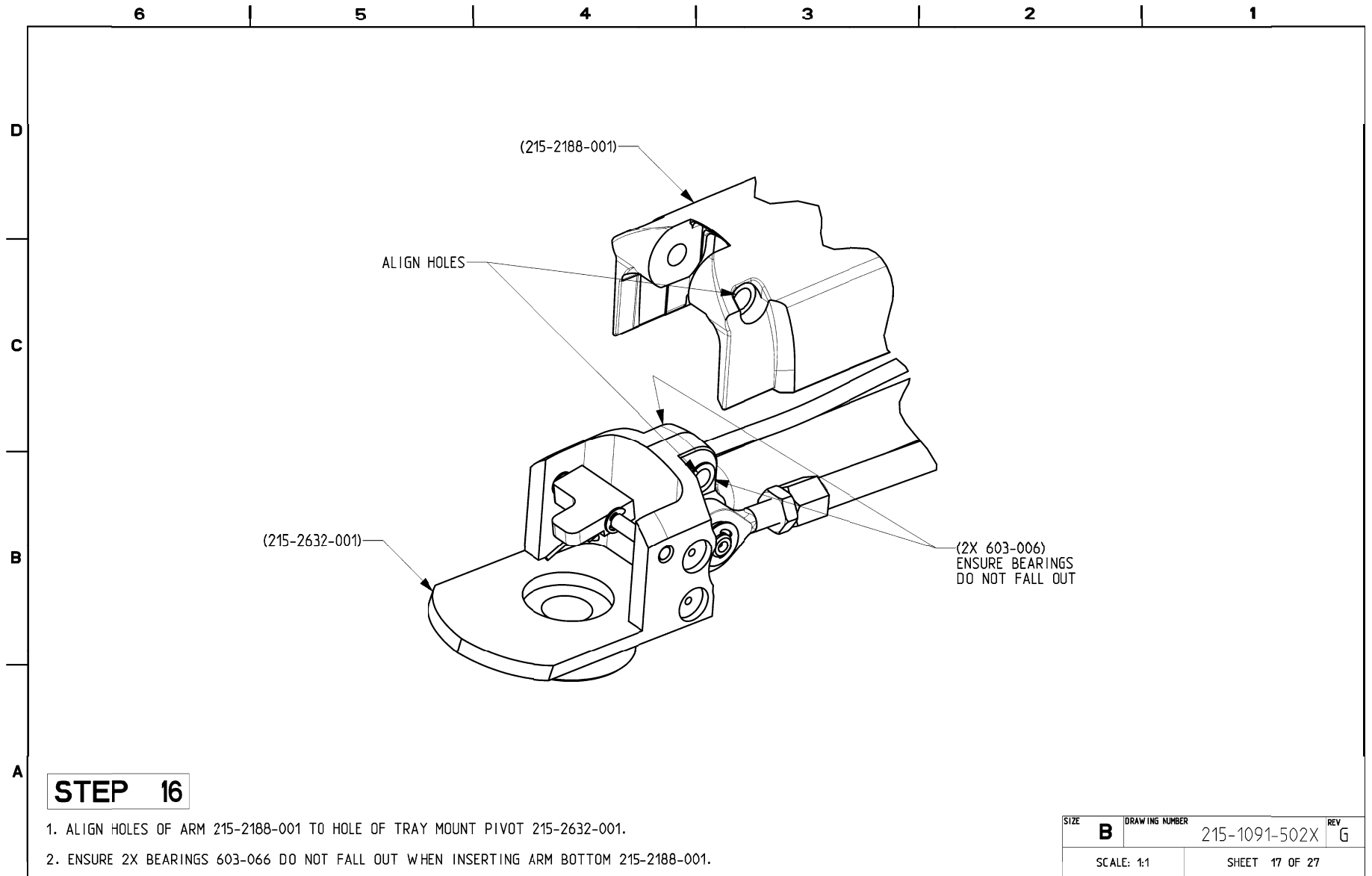
1. HOOK RELEASE LEVER 215-2146-001 ONTO END OF BRAKE CABLE 215-1799-001 AS SHOWN.

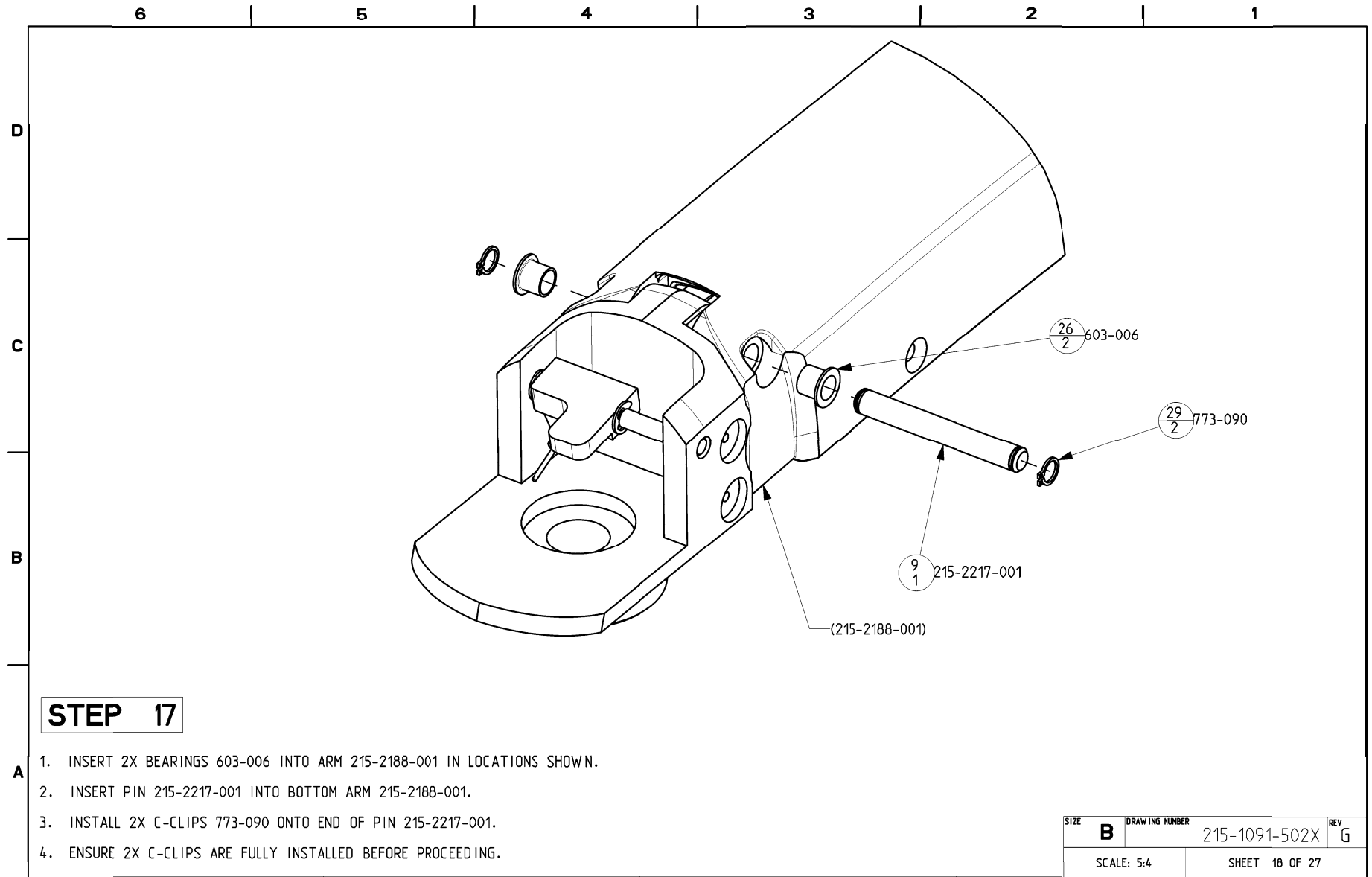
SIZE	DRAWING NUMBER	REV
B	215-1091-502X	G
SCALE: 2:1		SHEET 13 OF 27

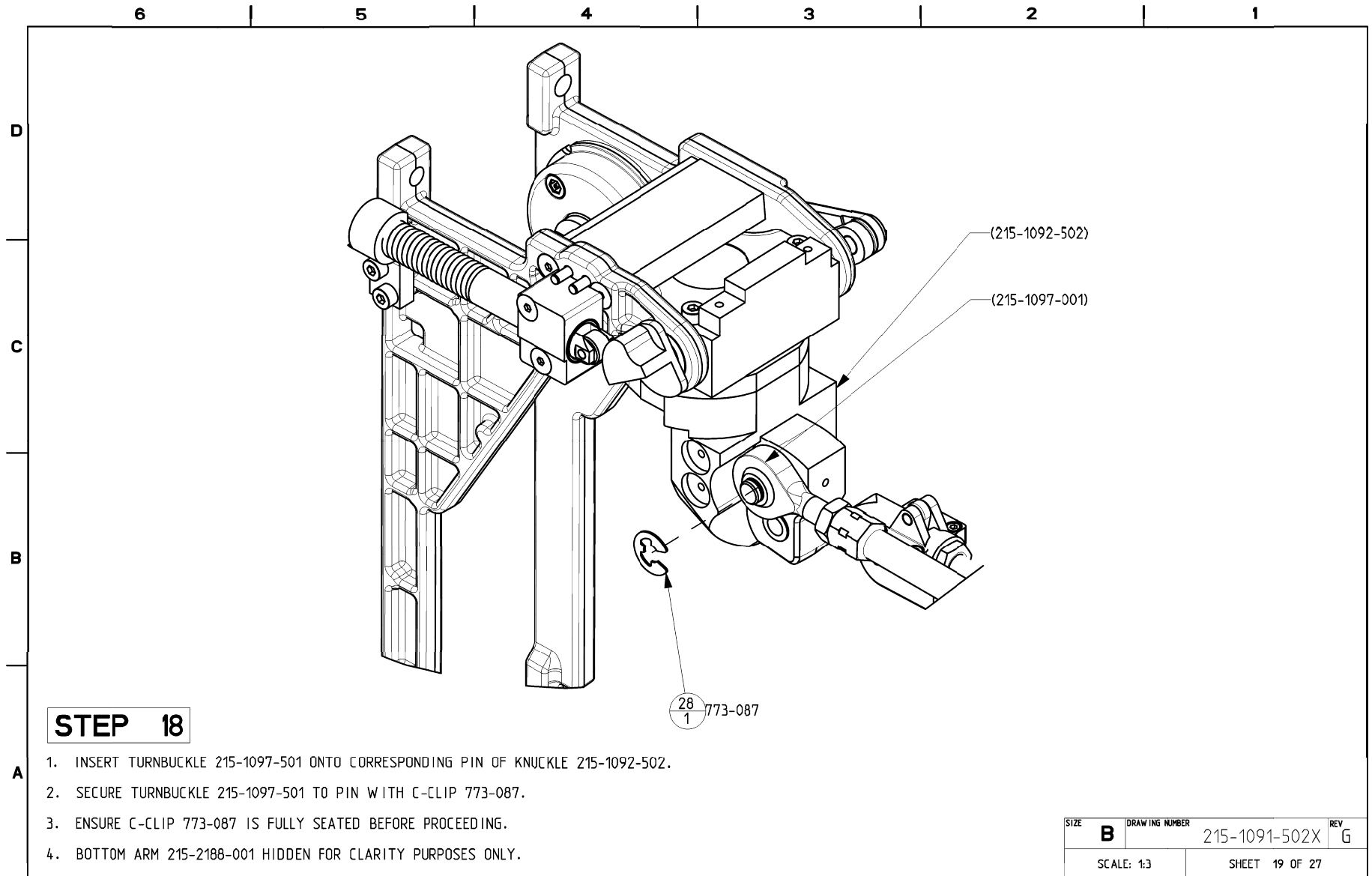


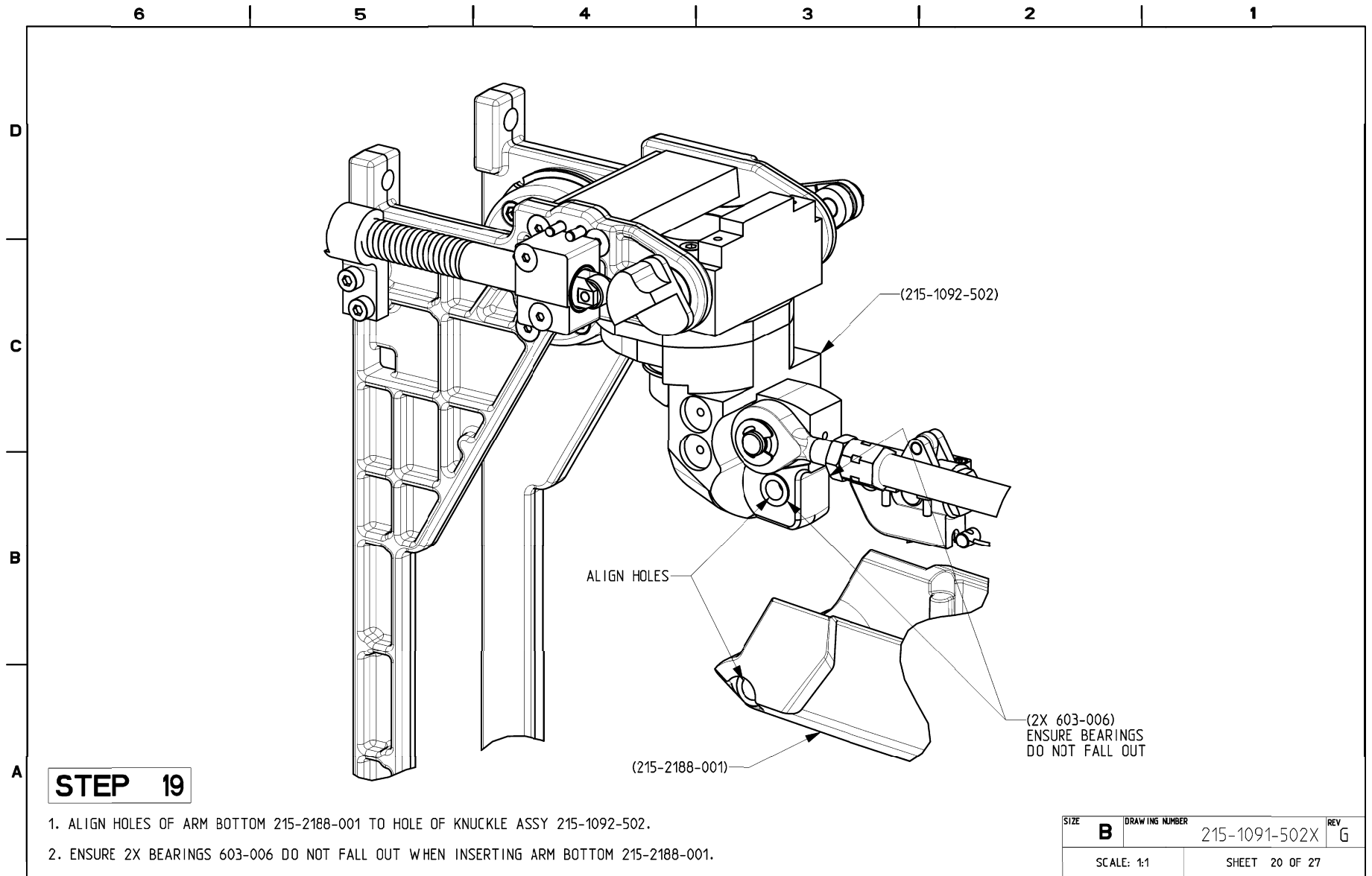


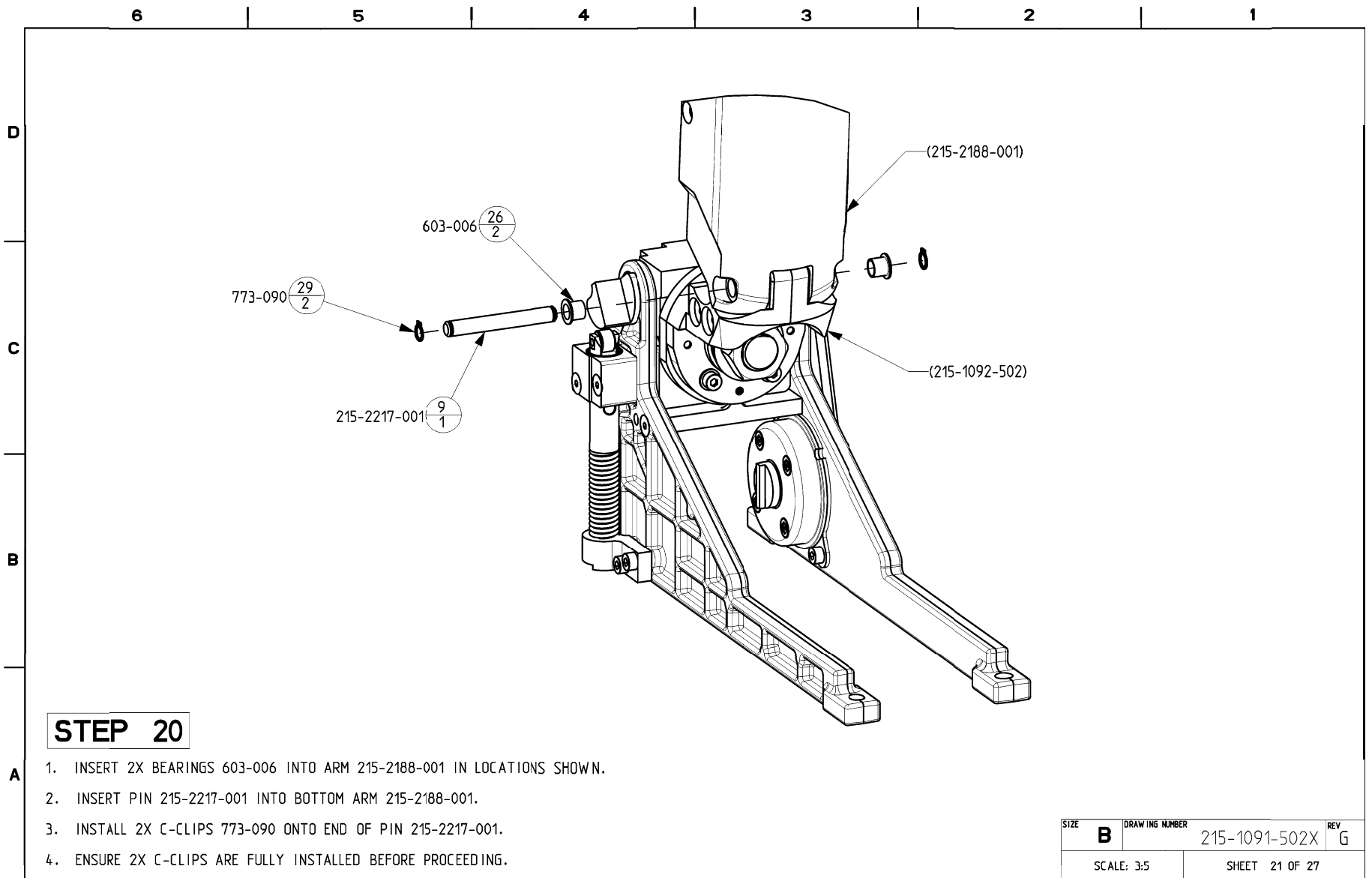


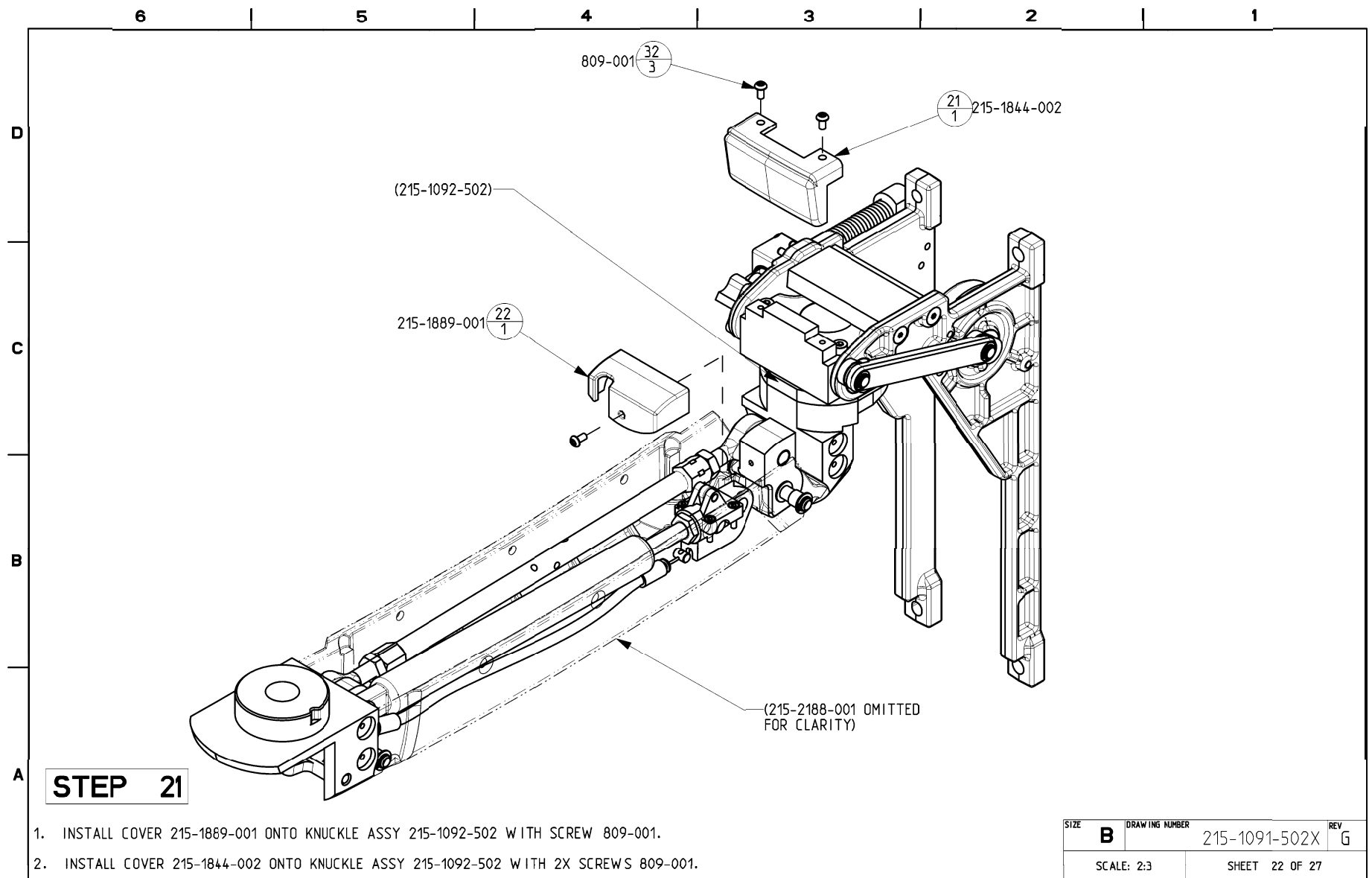


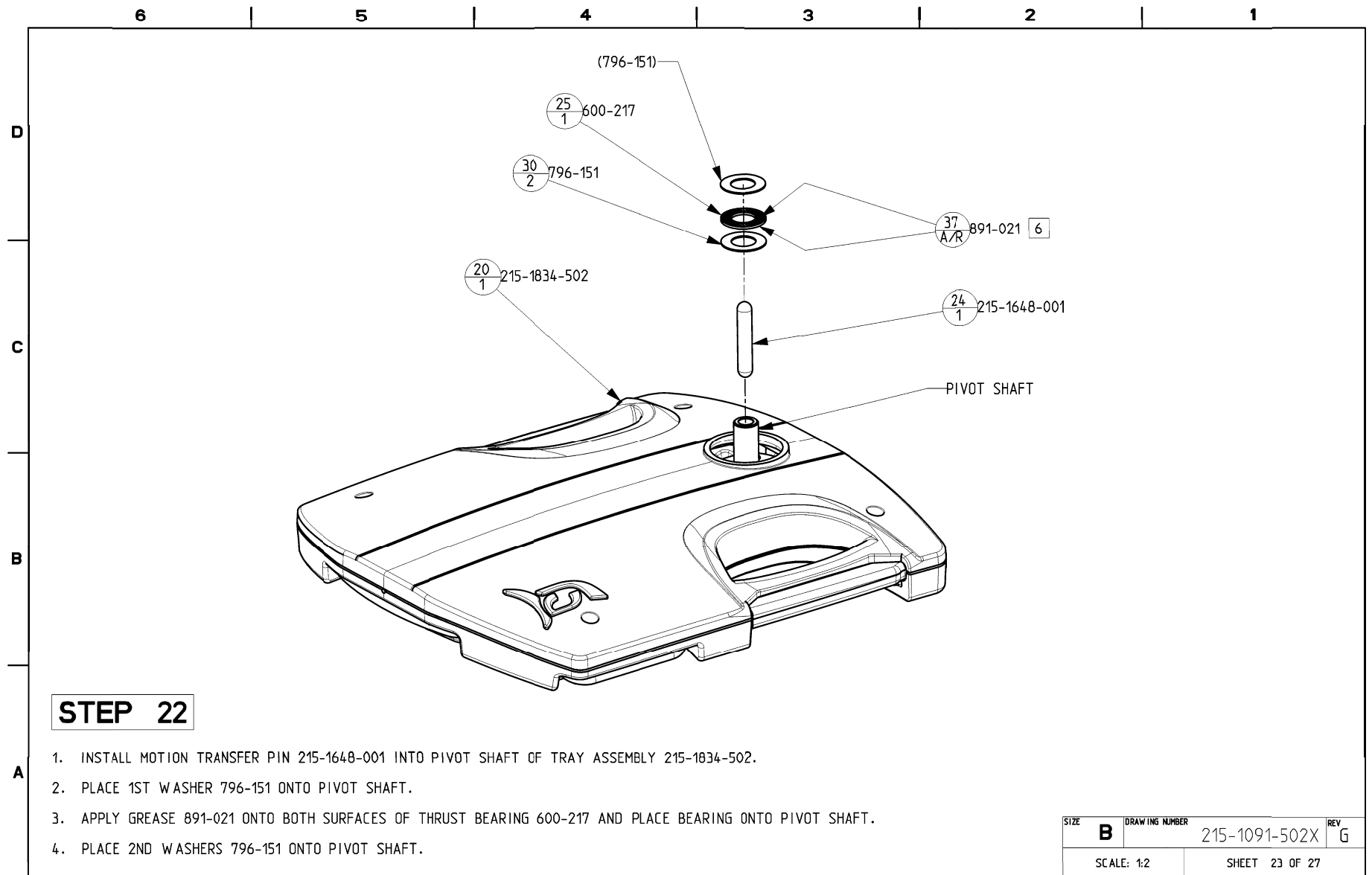


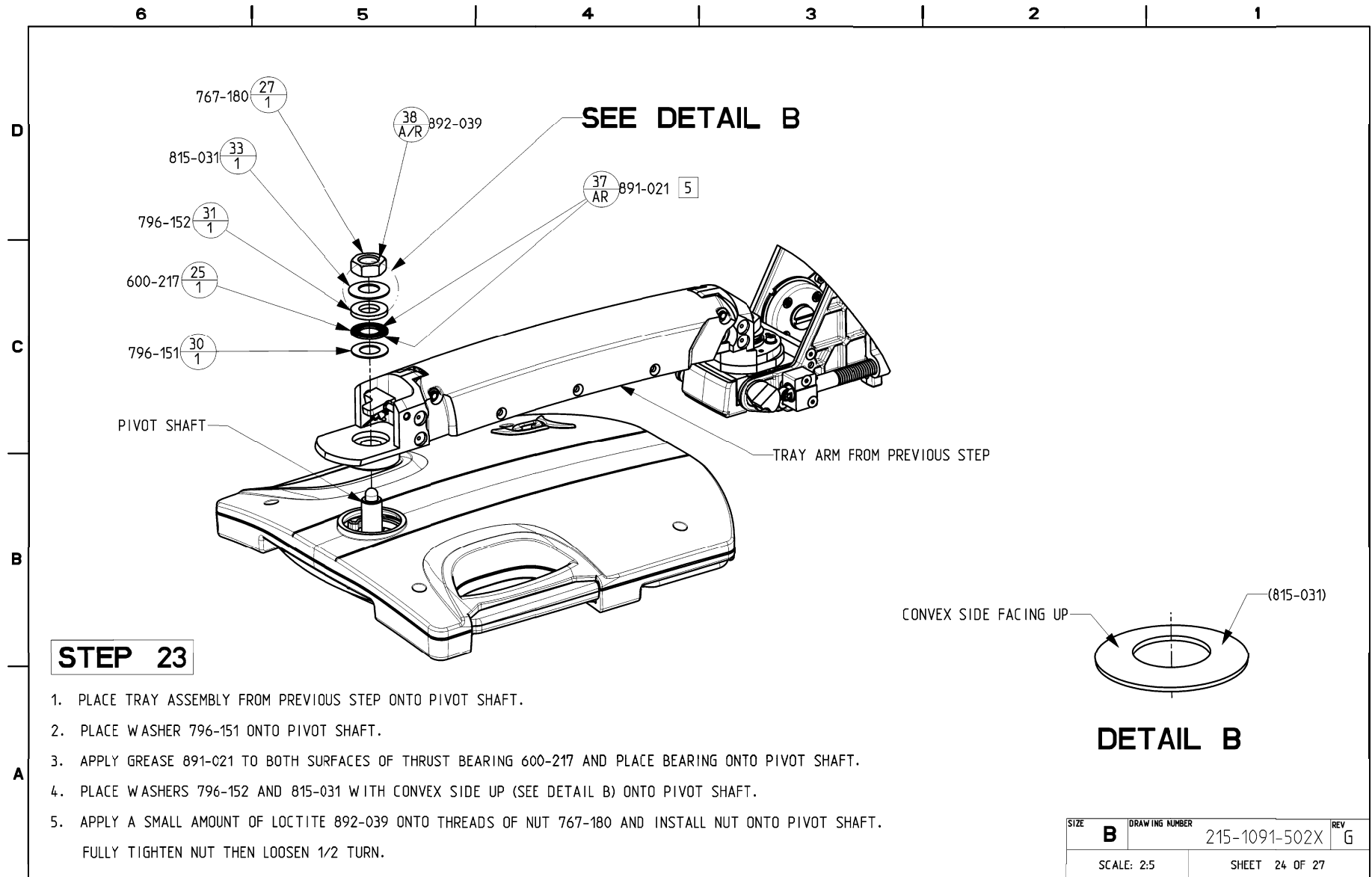


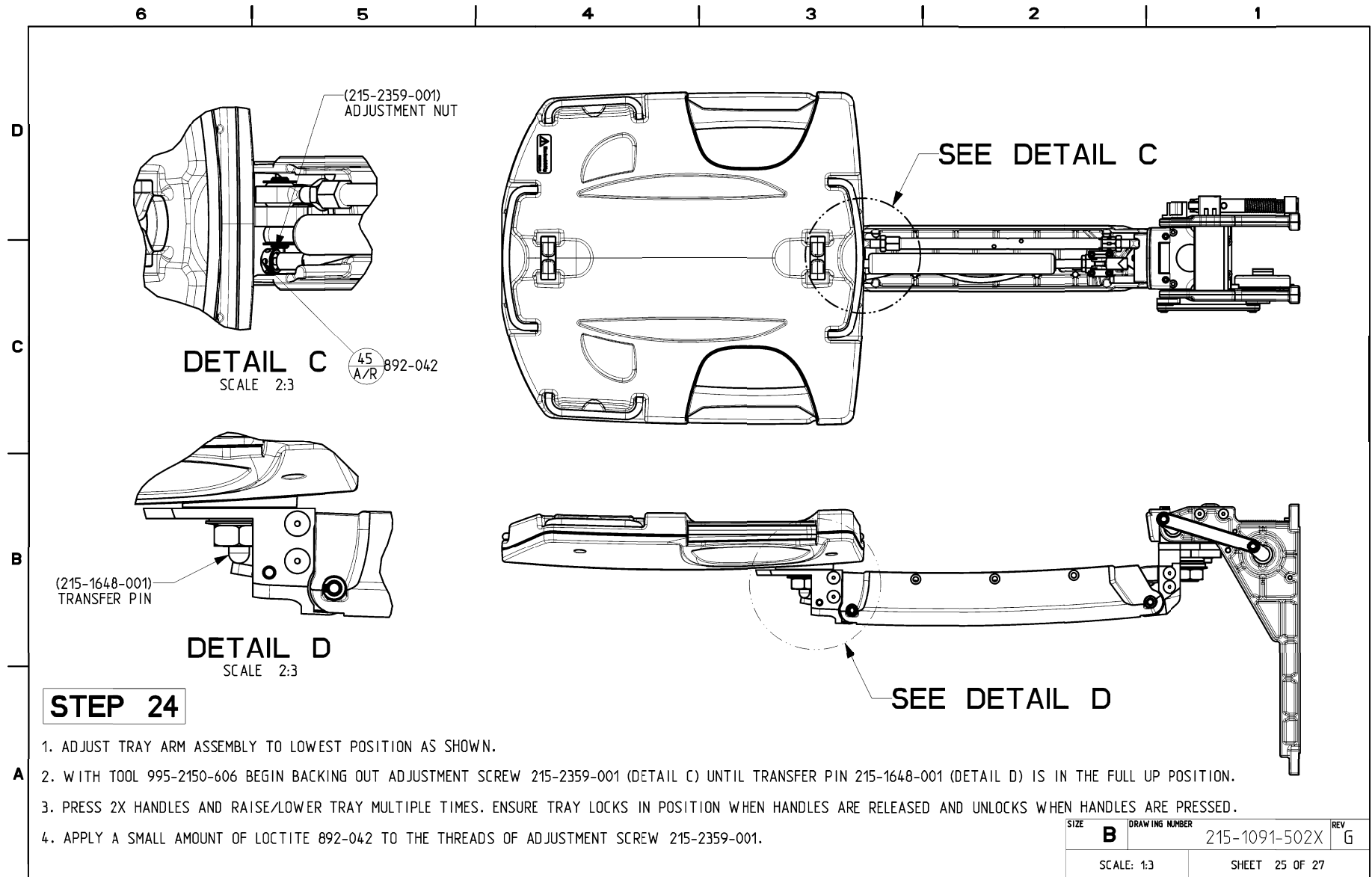


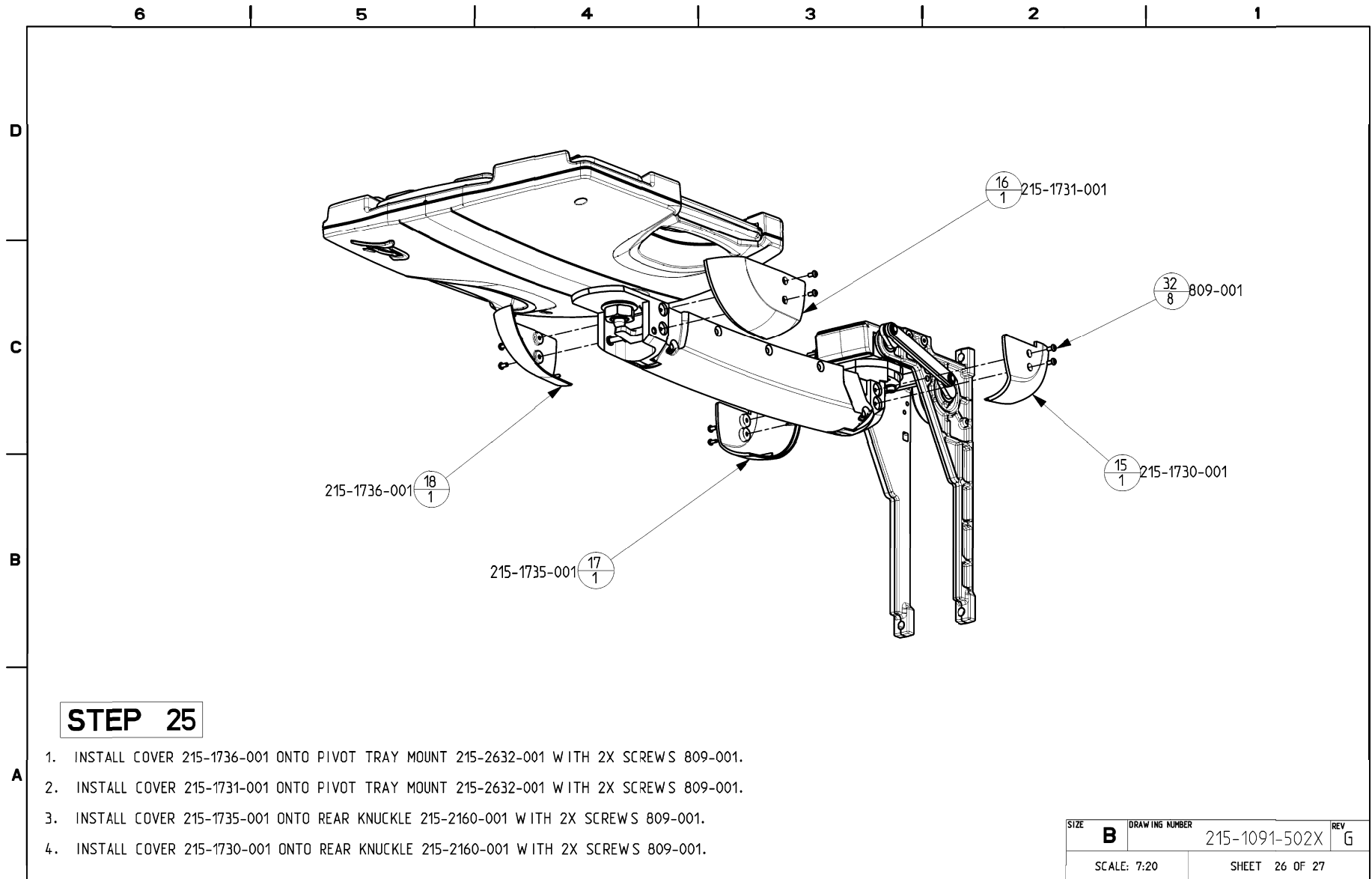


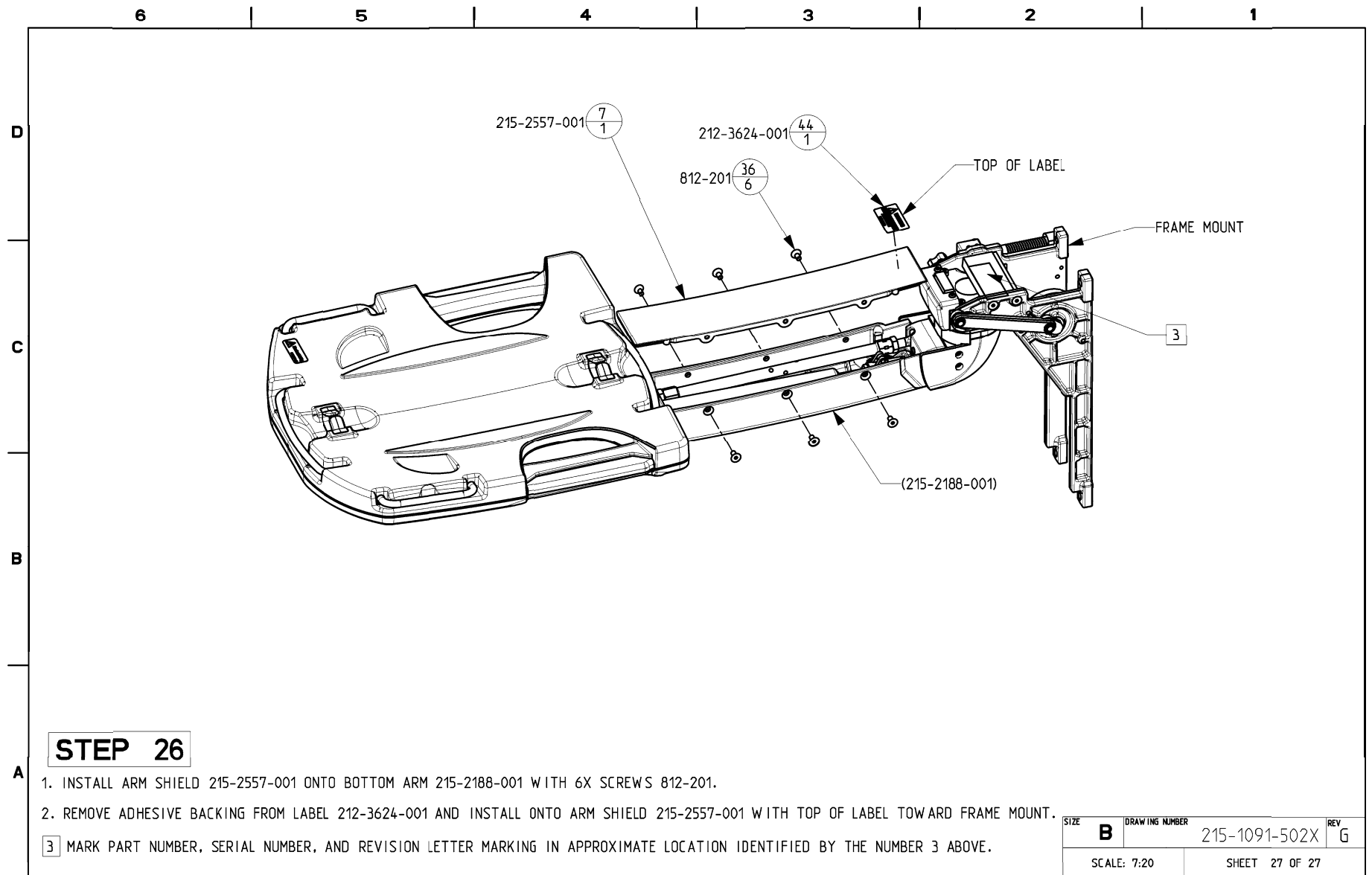










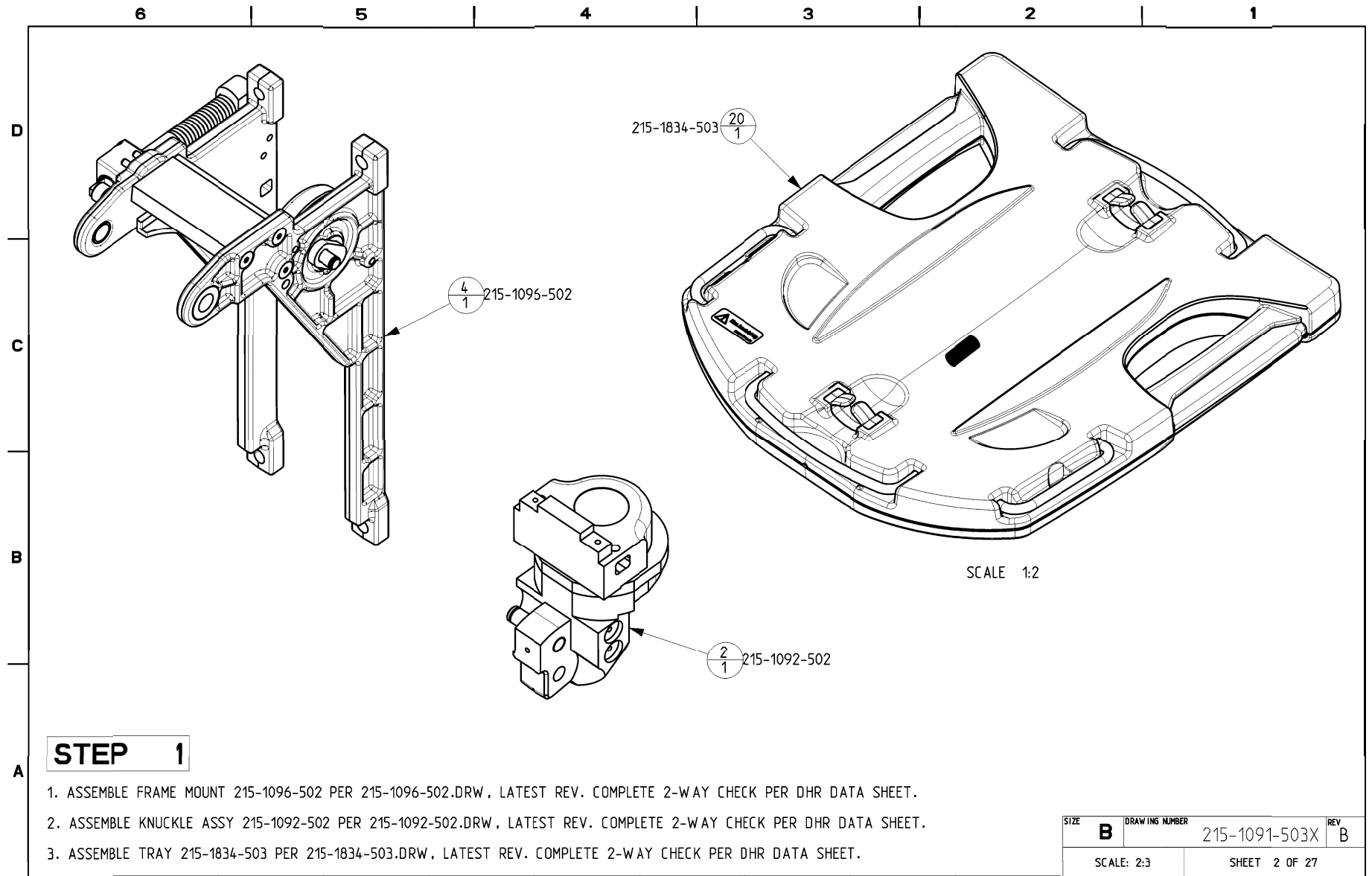


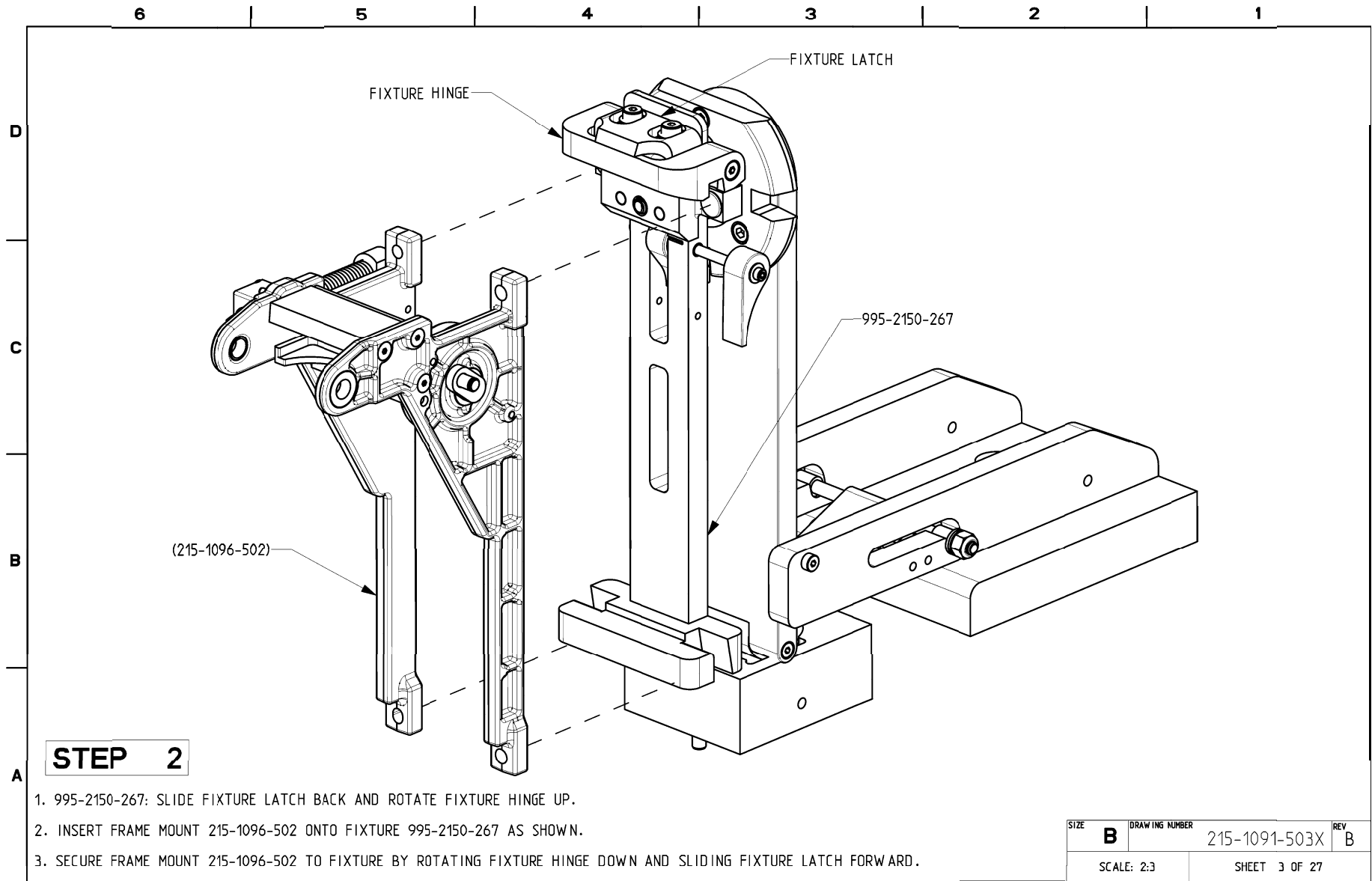
8 215-1091-503S IS MADE FROM ONE 215-1091-503

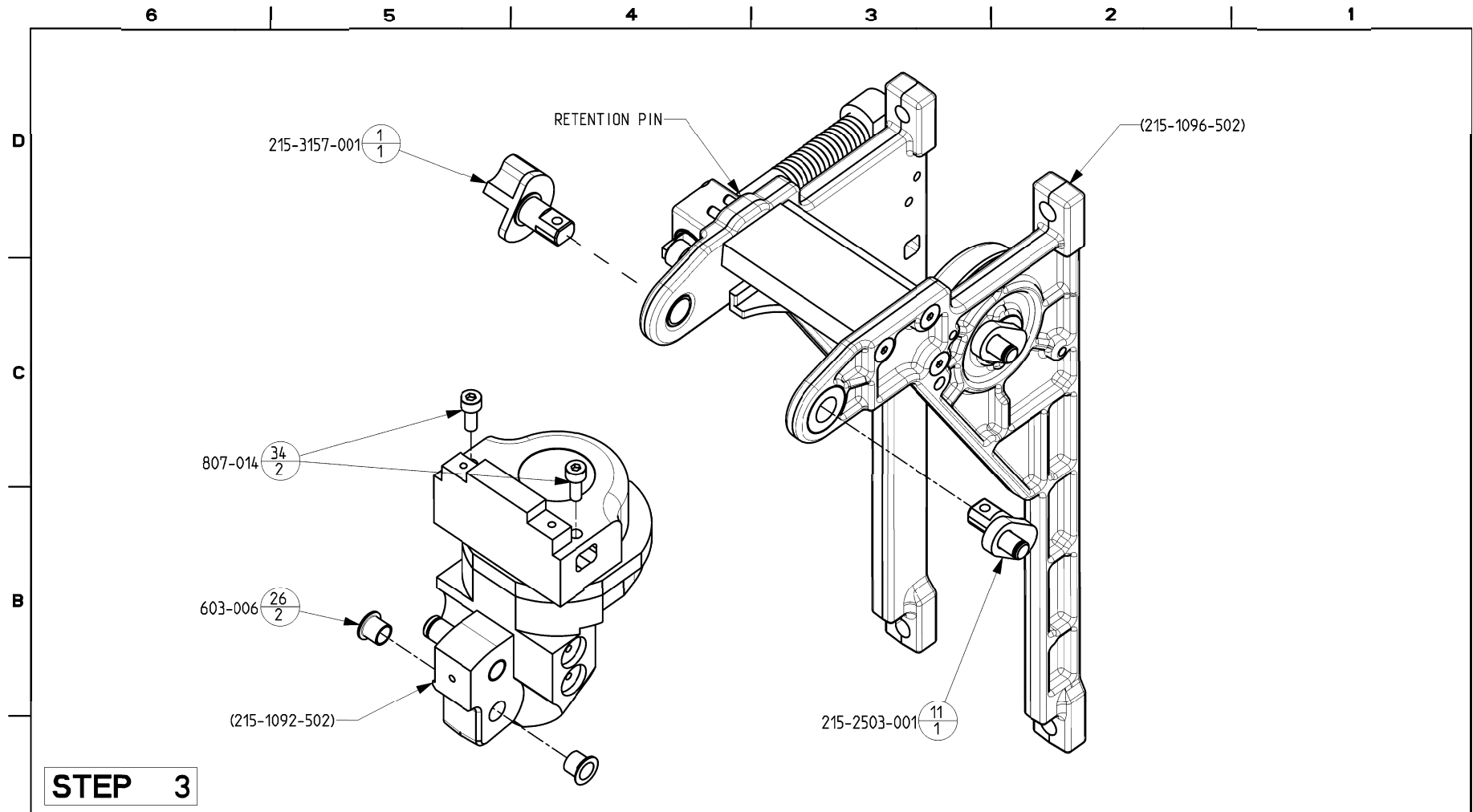


TABULATION						
PART NUMBER	REV	DESCRIPTION	PART NUMBER	7	8	DESCRIPTION
215-1091-503	B	ASSY,TRAY ARM,SILVER	215-1091-503S			ASSY,TRAY ARM,SILVER SVC

6.230

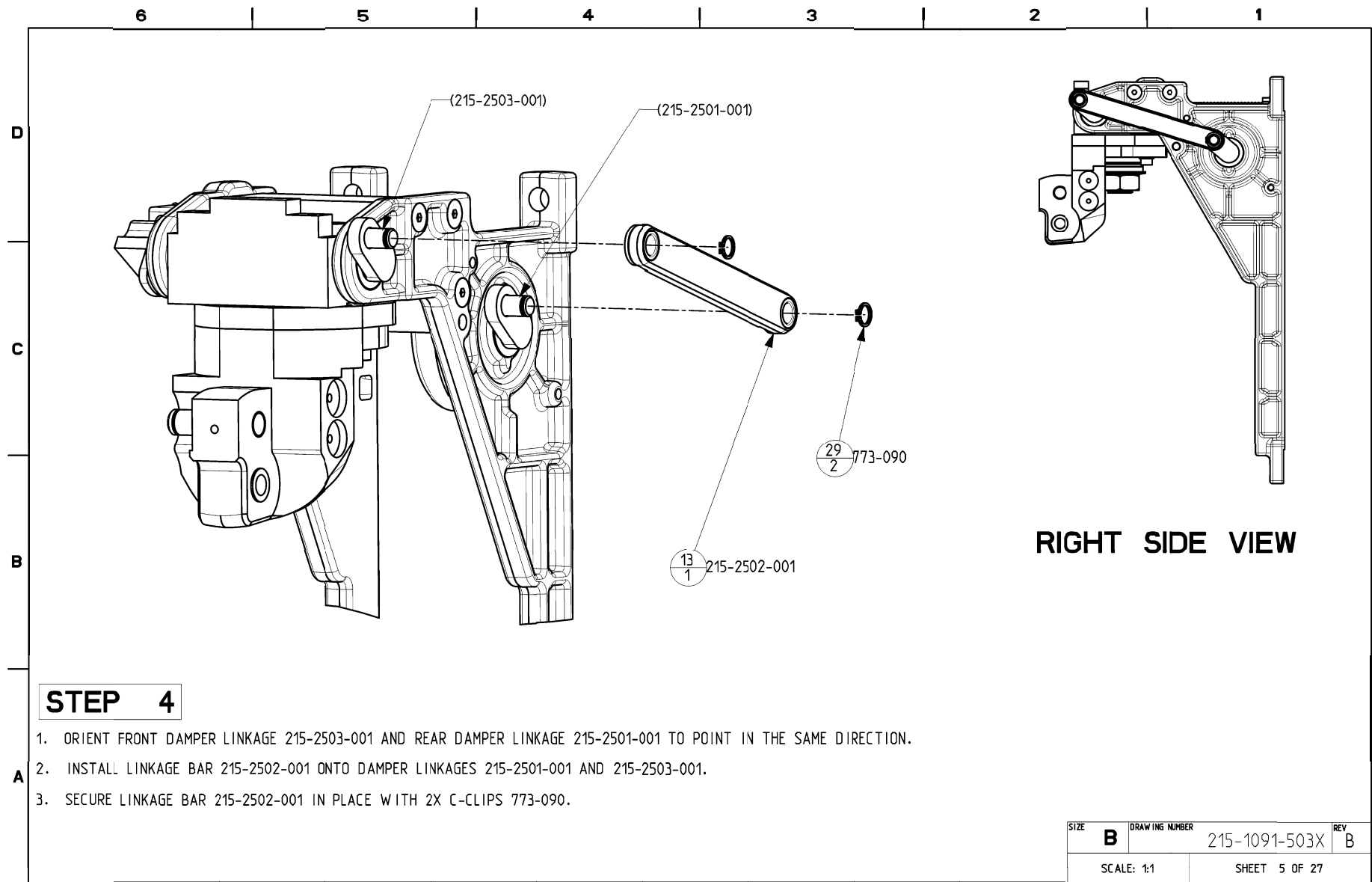


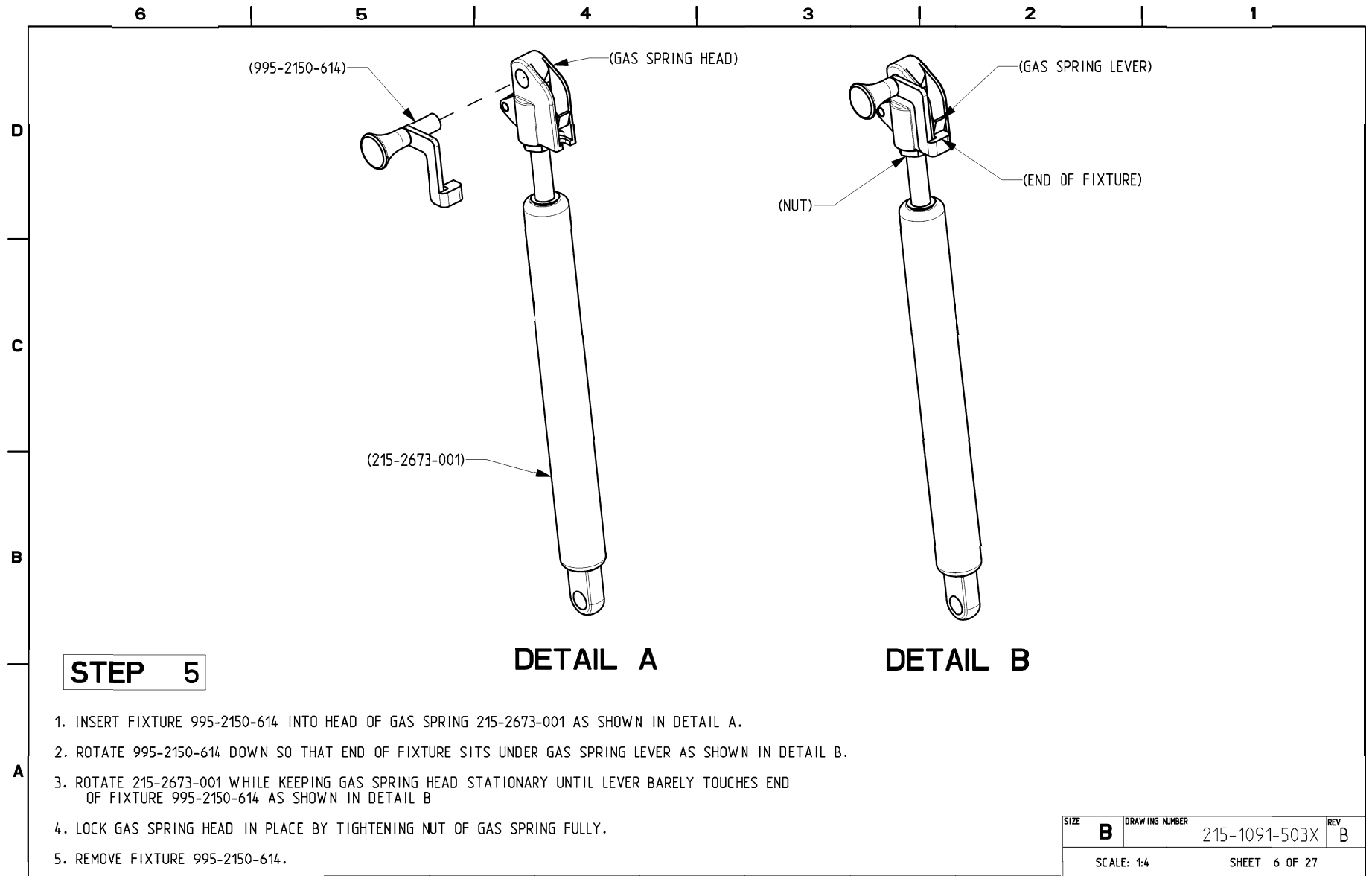


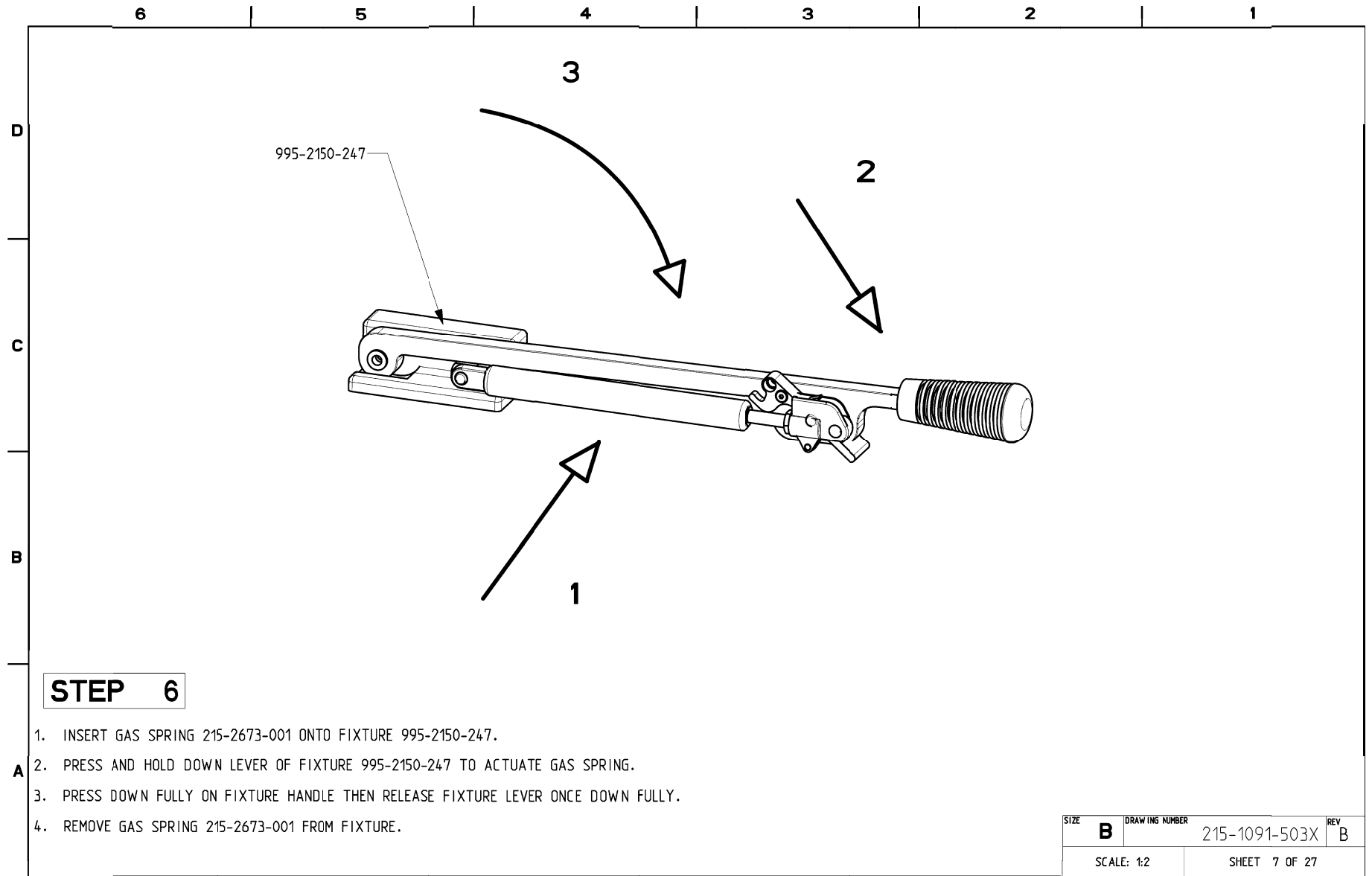


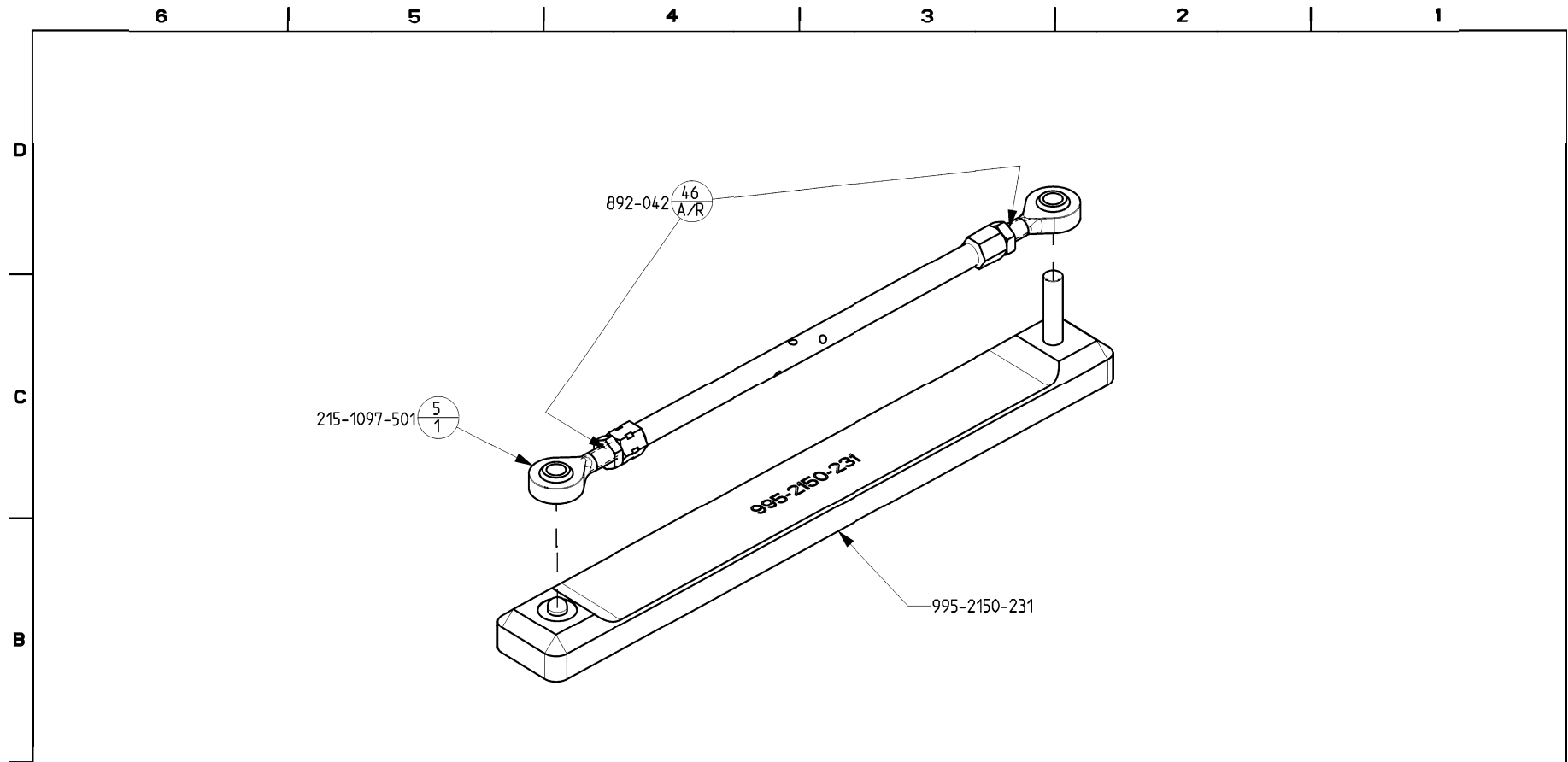
1. INSERT KNUCKLE 215-1092-502 INTO FRAME MOUNT 215-1096-502 AND SECURE IN PLACE WITH CAM 215-3157-001 AND FRONT LINKAGE 215-2503-001 IN ORIENTATION SHOWN.
2. REMOVE 3MM NUT DRIVER RETENTION PIN FROM FRAME MOUNT 215-1096-502.
3. INSTALL 2X SCREWS 807-014 INTO KNUCKLE ASSY 215-1092-502.
4. PRESS 2X BUSHING 603-006 INTO IDENTIFIED LOCATIONS OF KNUCKLE ASSY 215-1092-502.

SIZE	B	DRAWING NUMBER	215-1091-503X	REV	B
SCALE: 7:8			SHEET 4 OF 27		





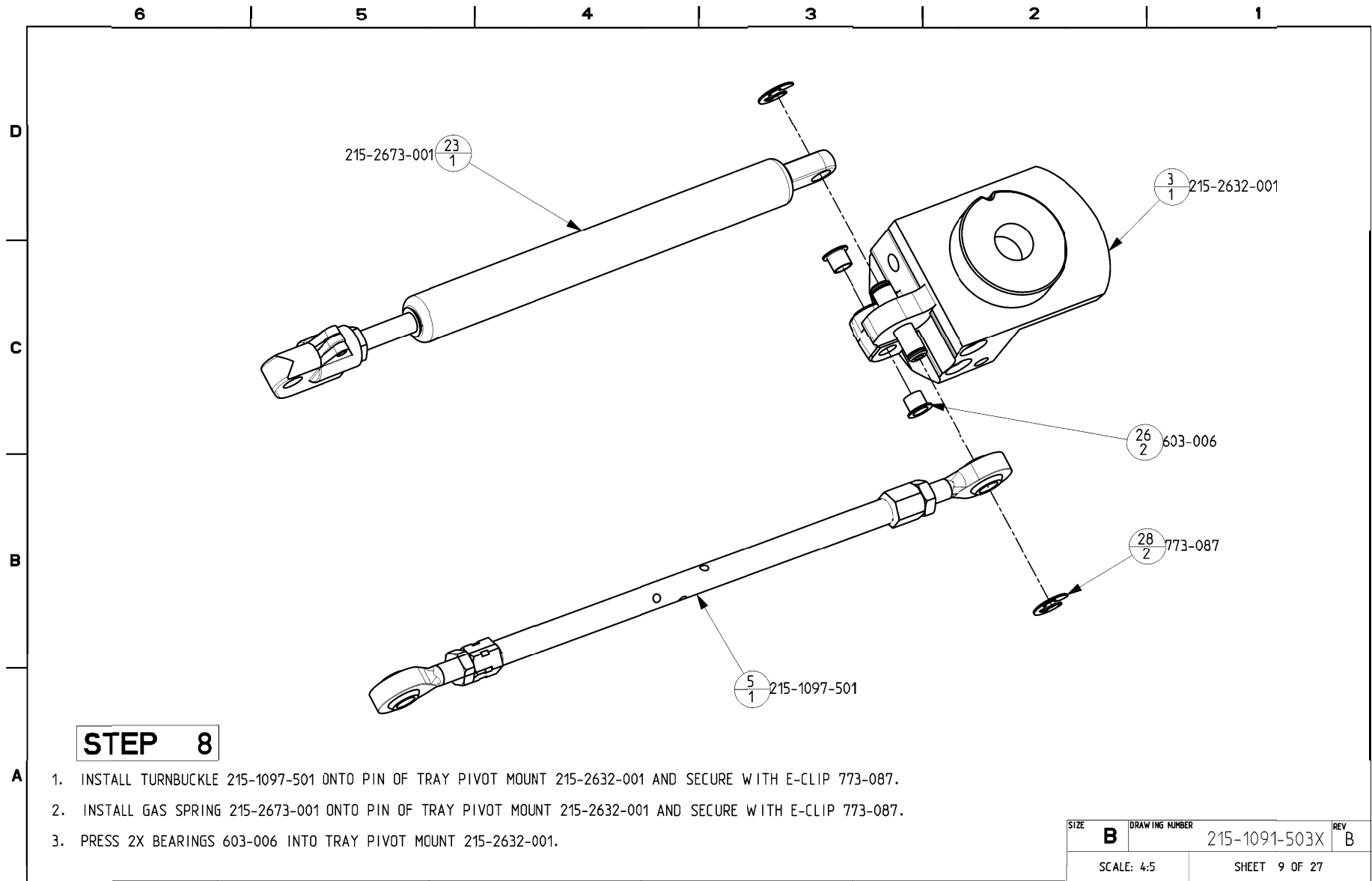


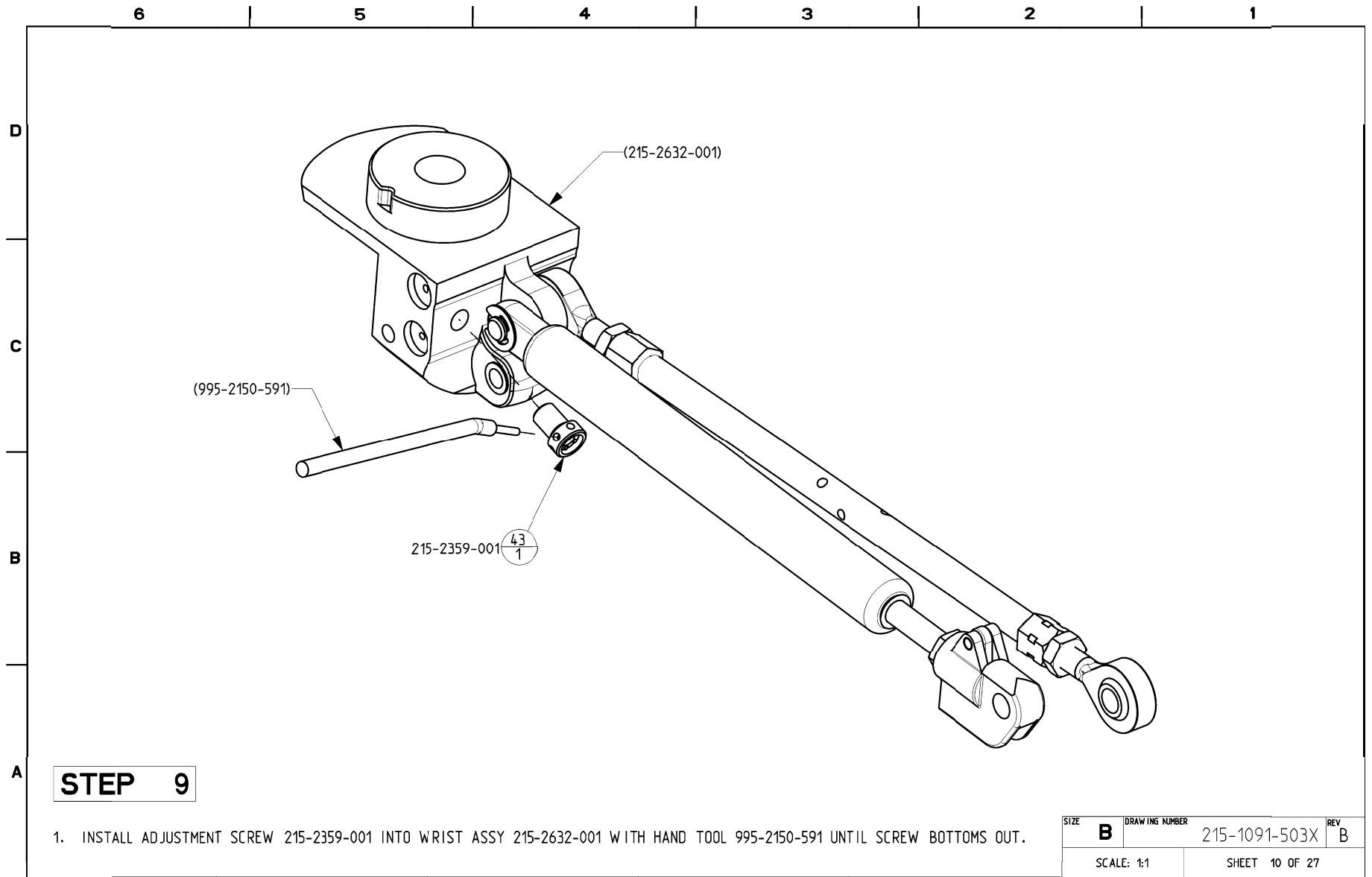


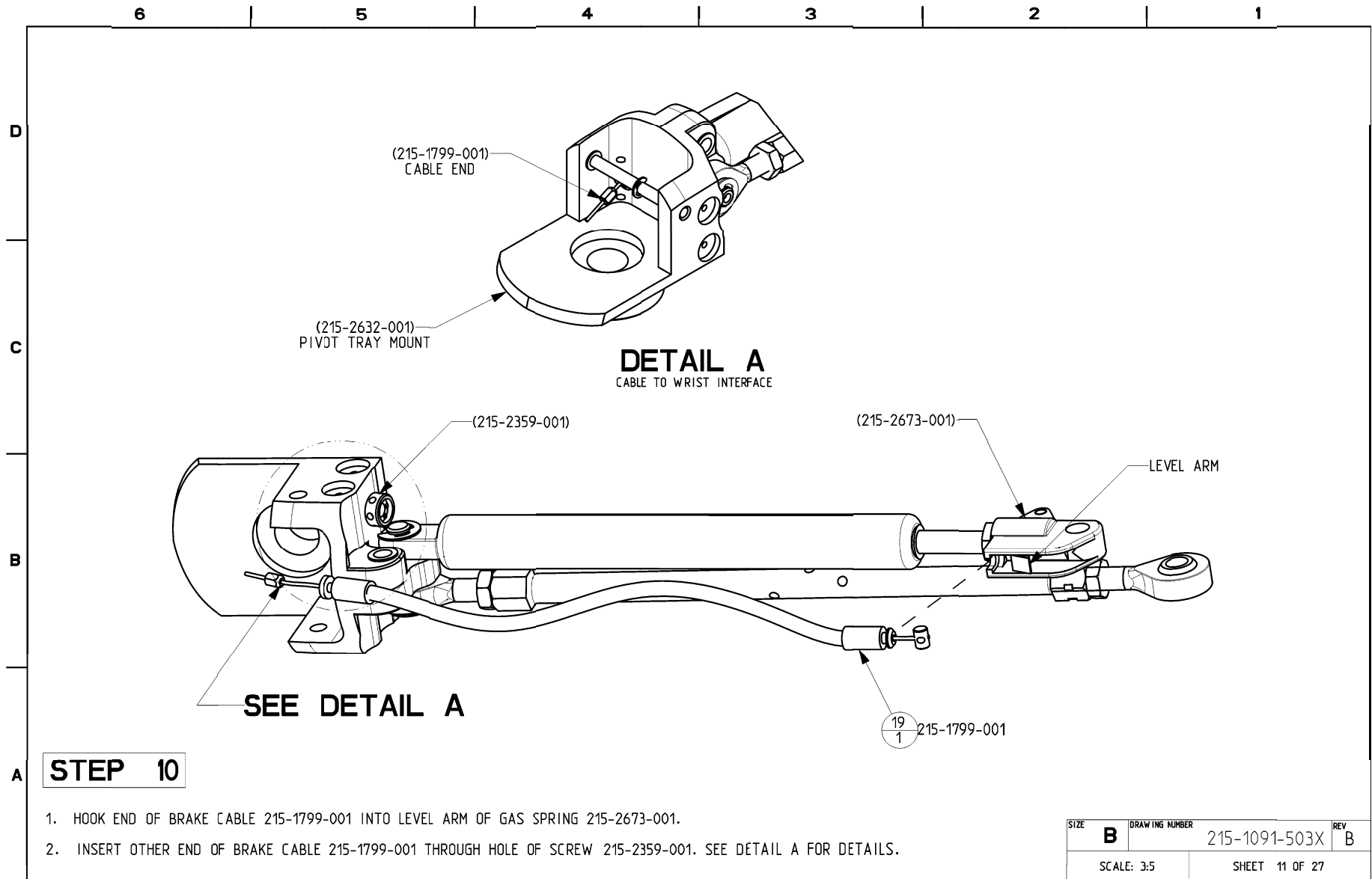
STEP 7

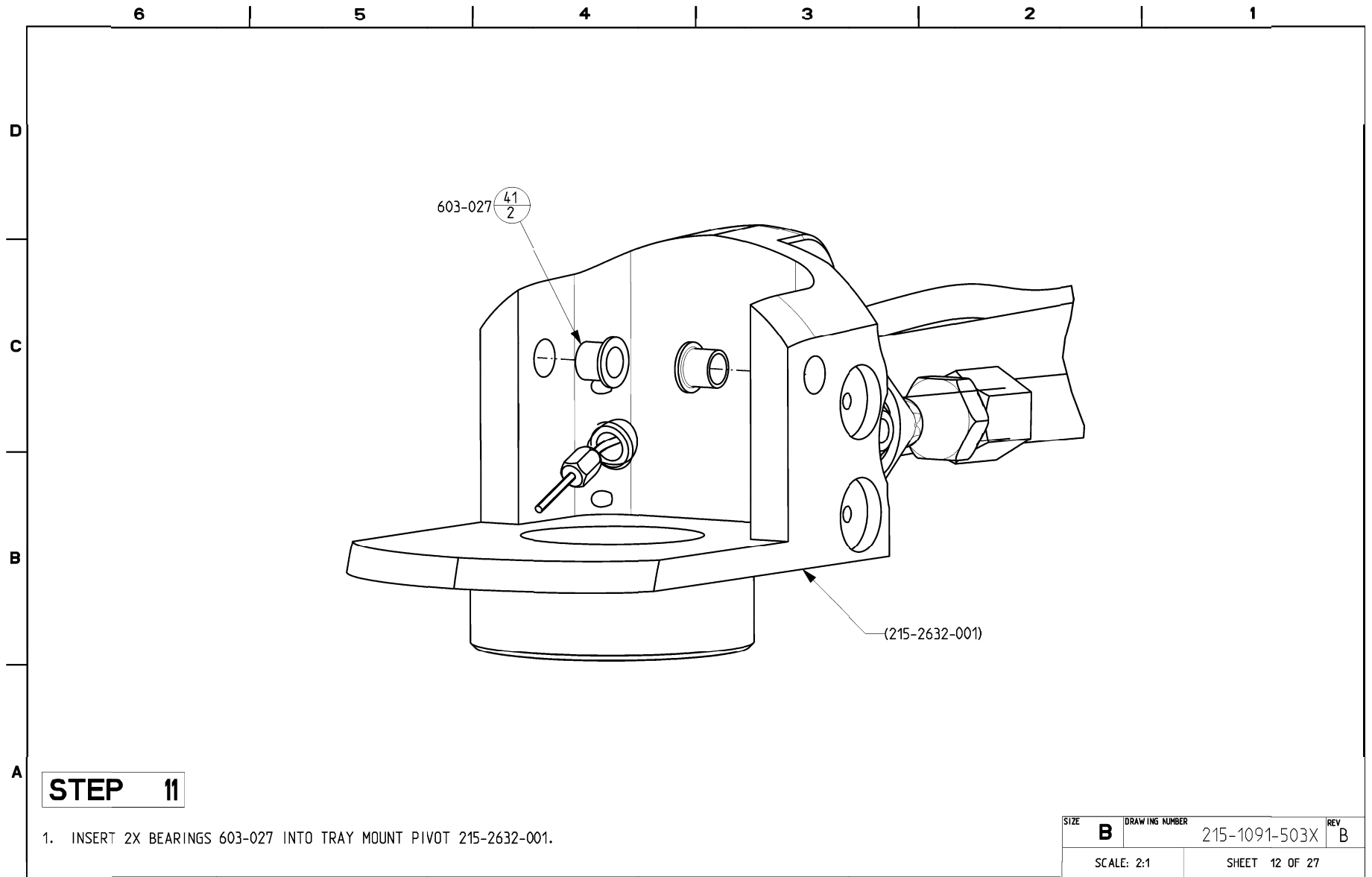
1. CONFIRM TURNBUCKLE 215-1097-501 IS SET TO PROPER LENGTH BY INSTALLING ONTO FIXTURE 995-2150-231 AS SHOWN. ADJUST TURNBUCKLE AS NECESSARY TO INSTALL.
2. FULLY TIGHTEN 2X NUTS ONTO SHAFT OF TURNBUCKLE 215-1097-501.
3. ADD LOCTITE 892-042 TO THE OUTSIDE OF 2X NUTS AS SHOWN.
4. REMOVE TURNBUCKLE 215-1097-501 FROM FIXTURE 995-2150-231.

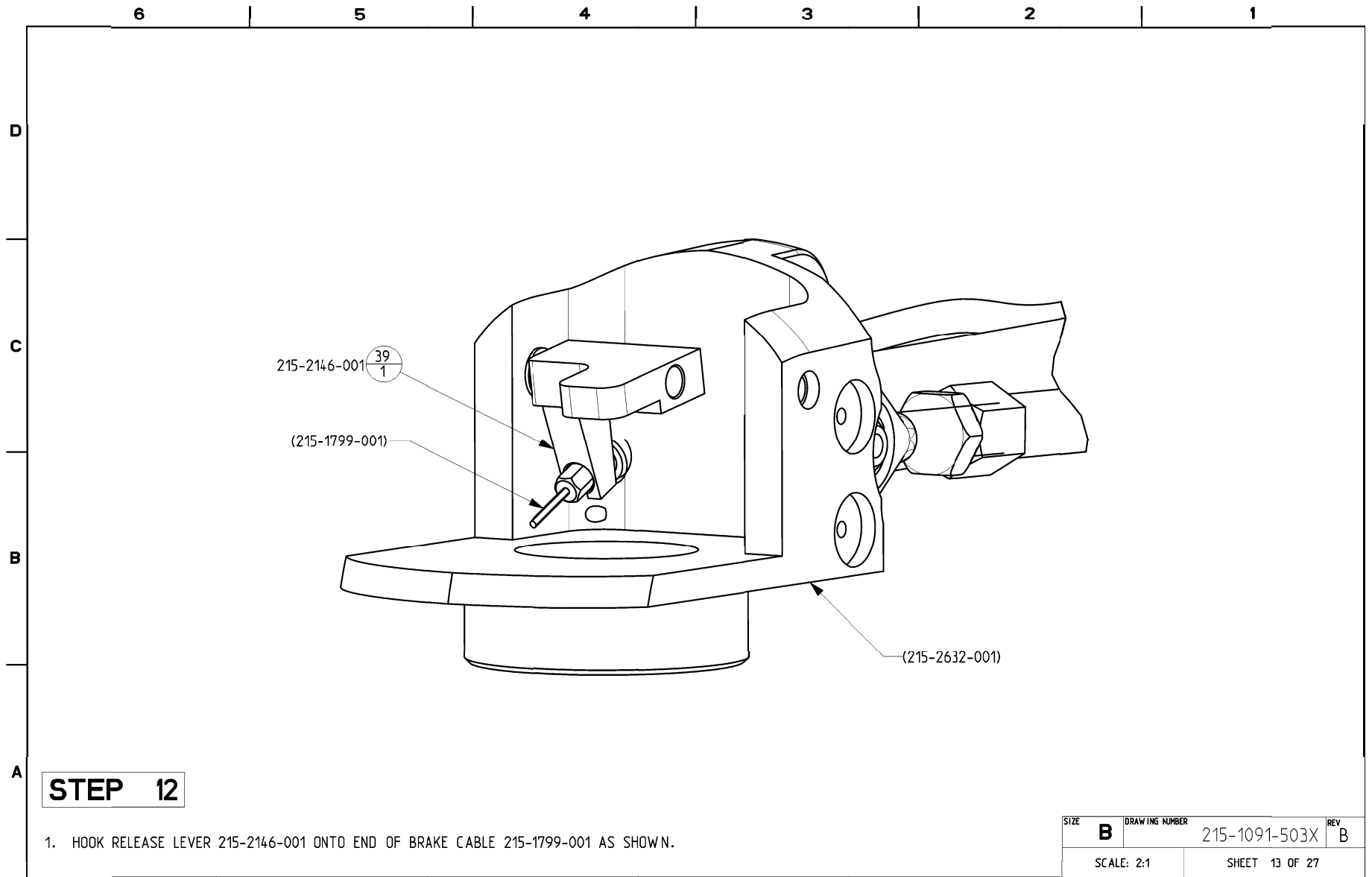
SIZE	B	DRAWING NUMBER	215-1091-503X	REV	B
SCALE: 2:3			SHEET 8 OF 27		

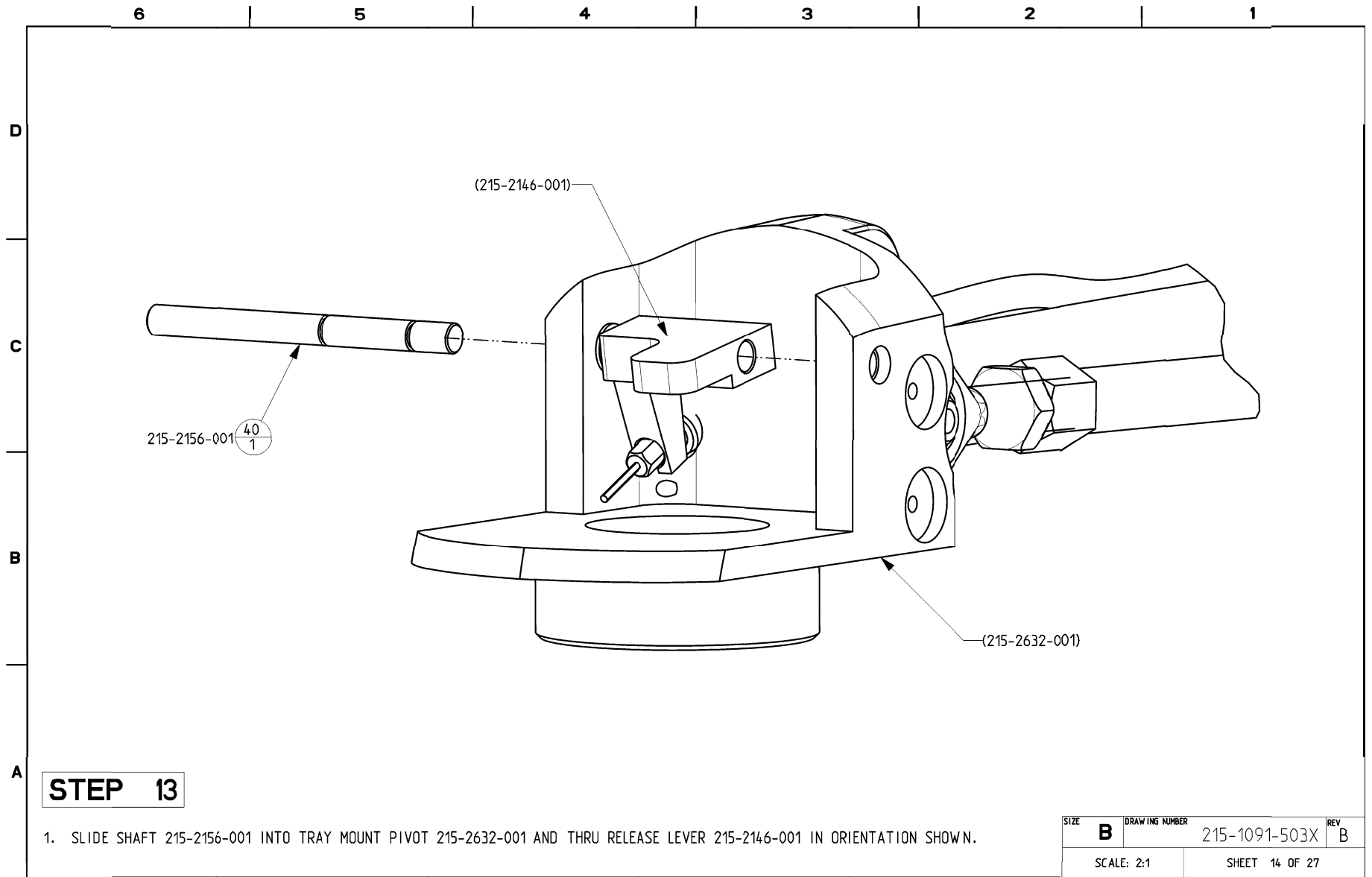


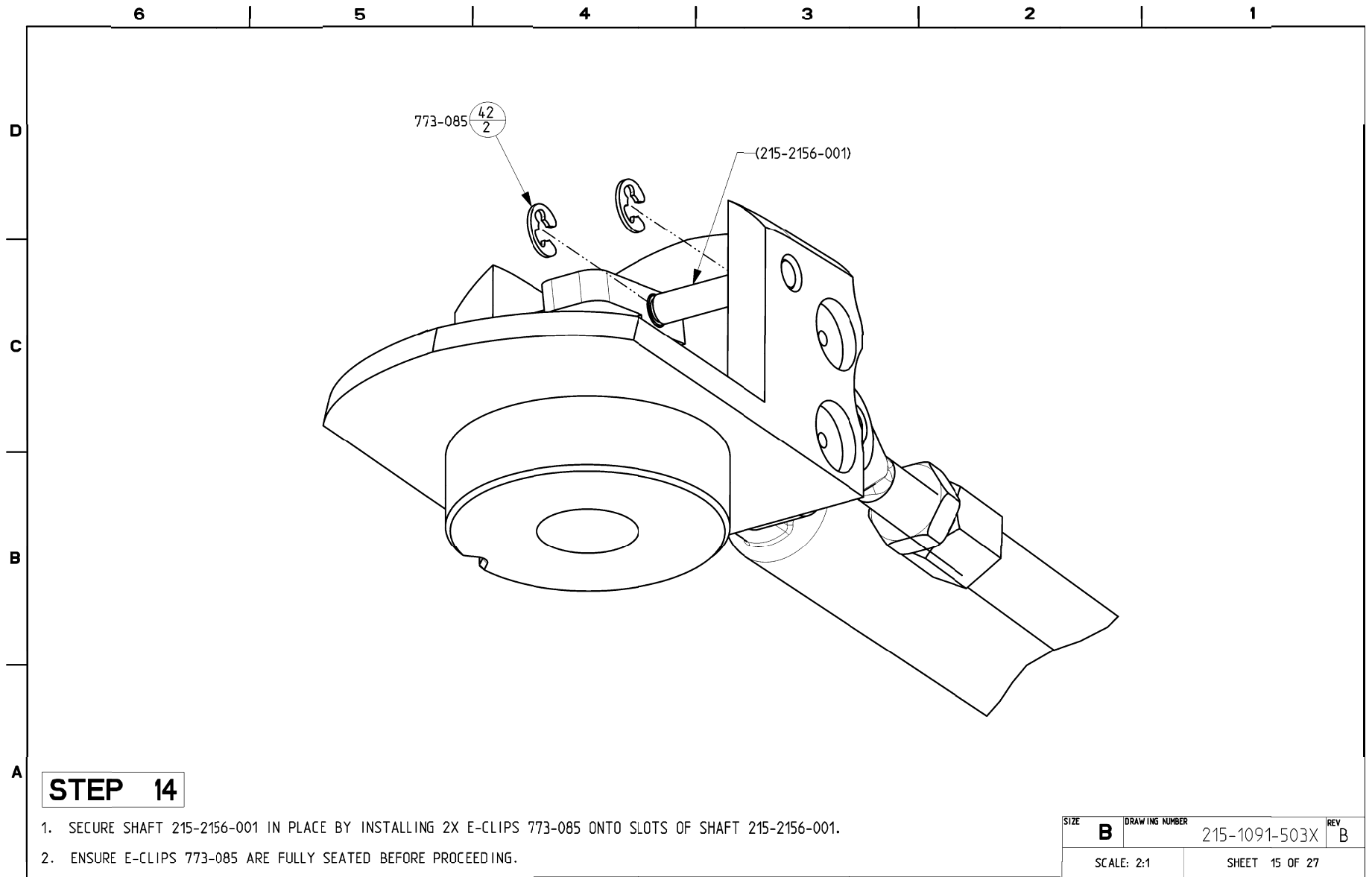


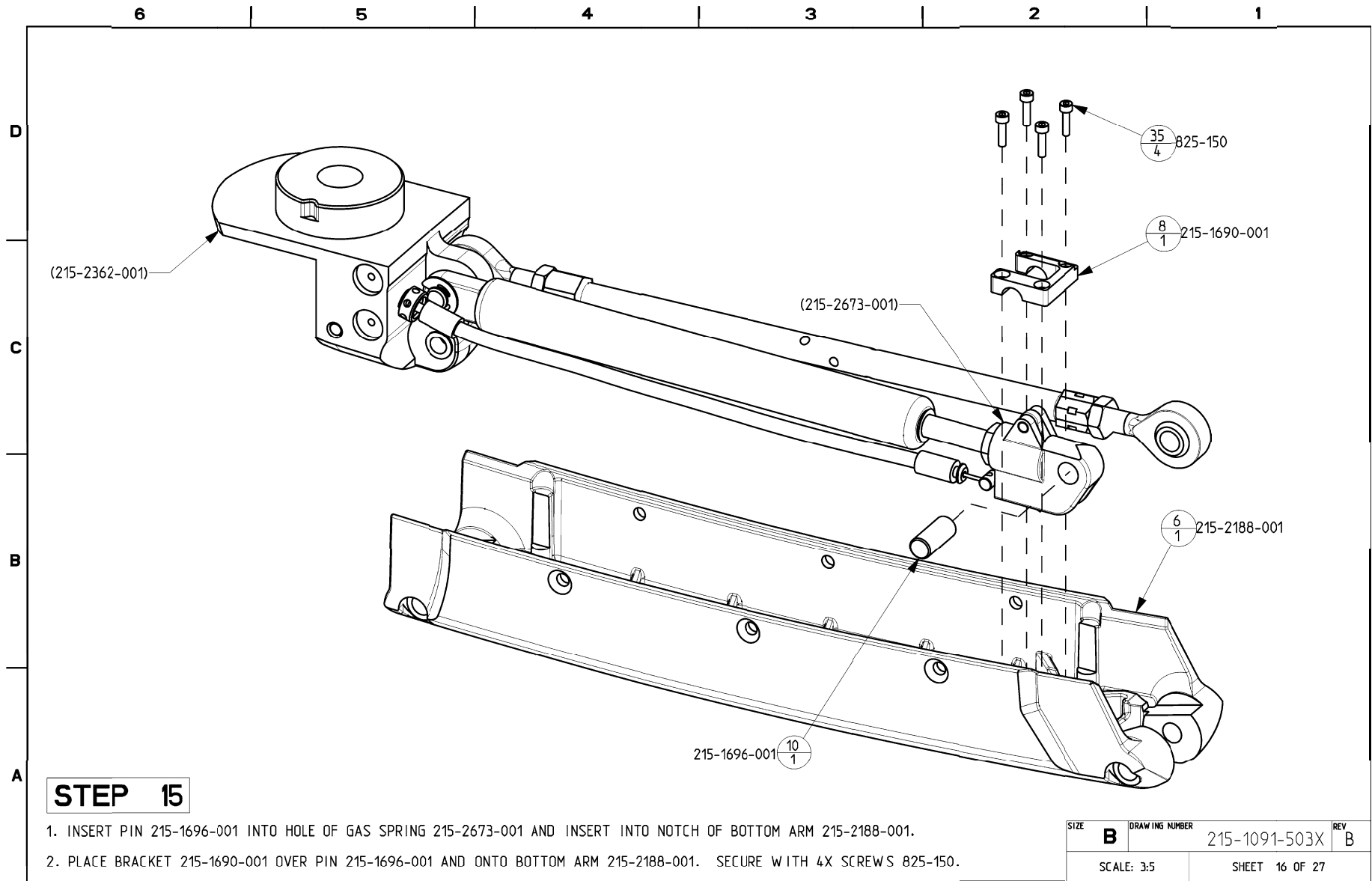


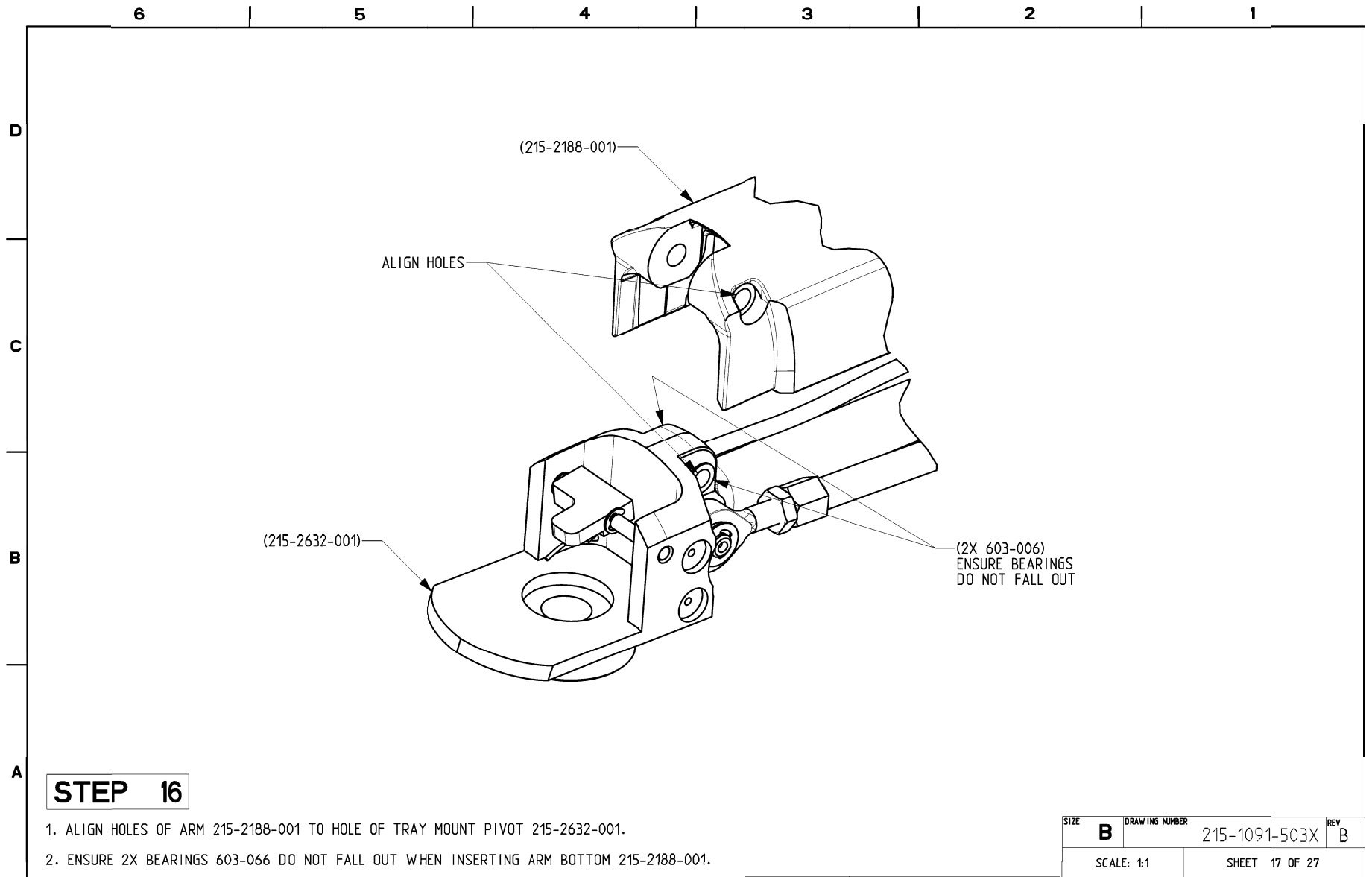


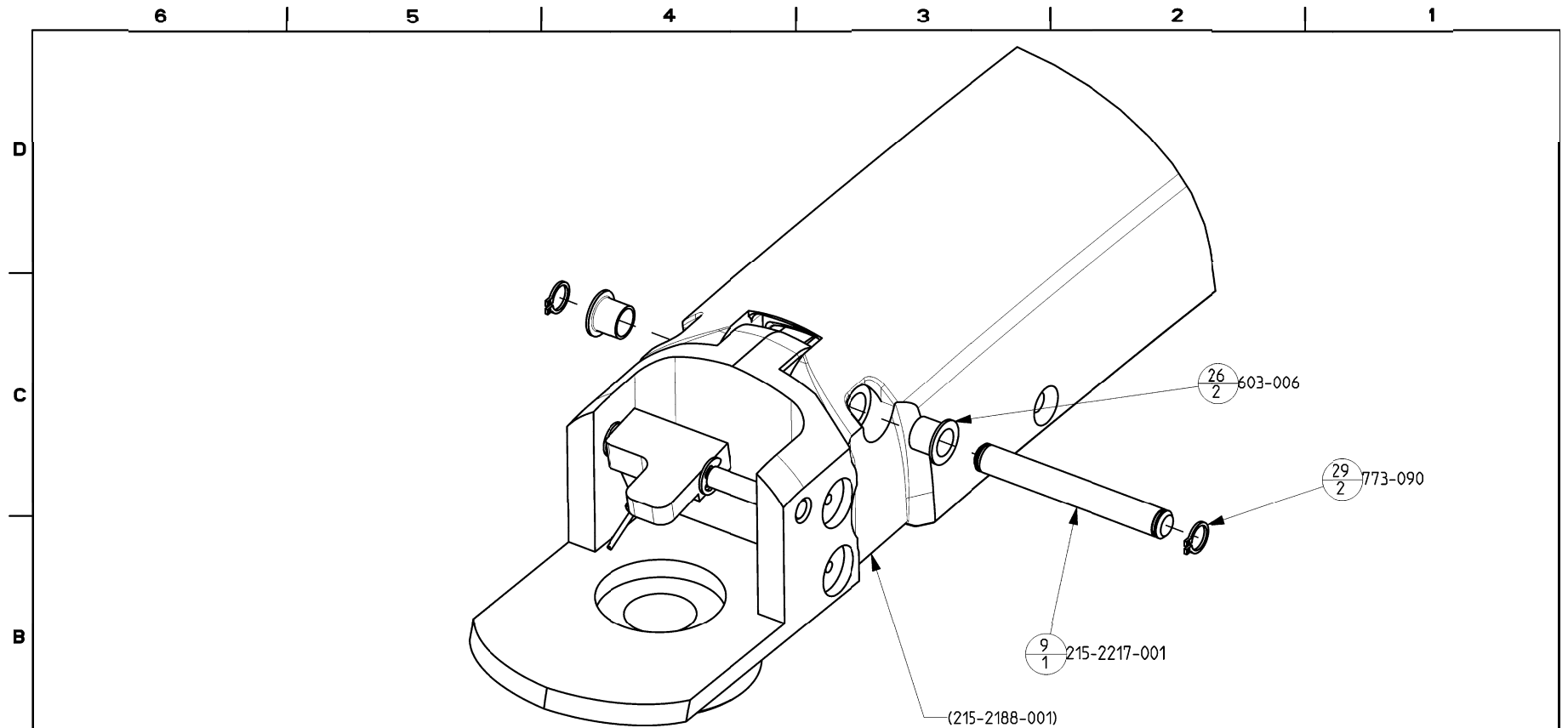








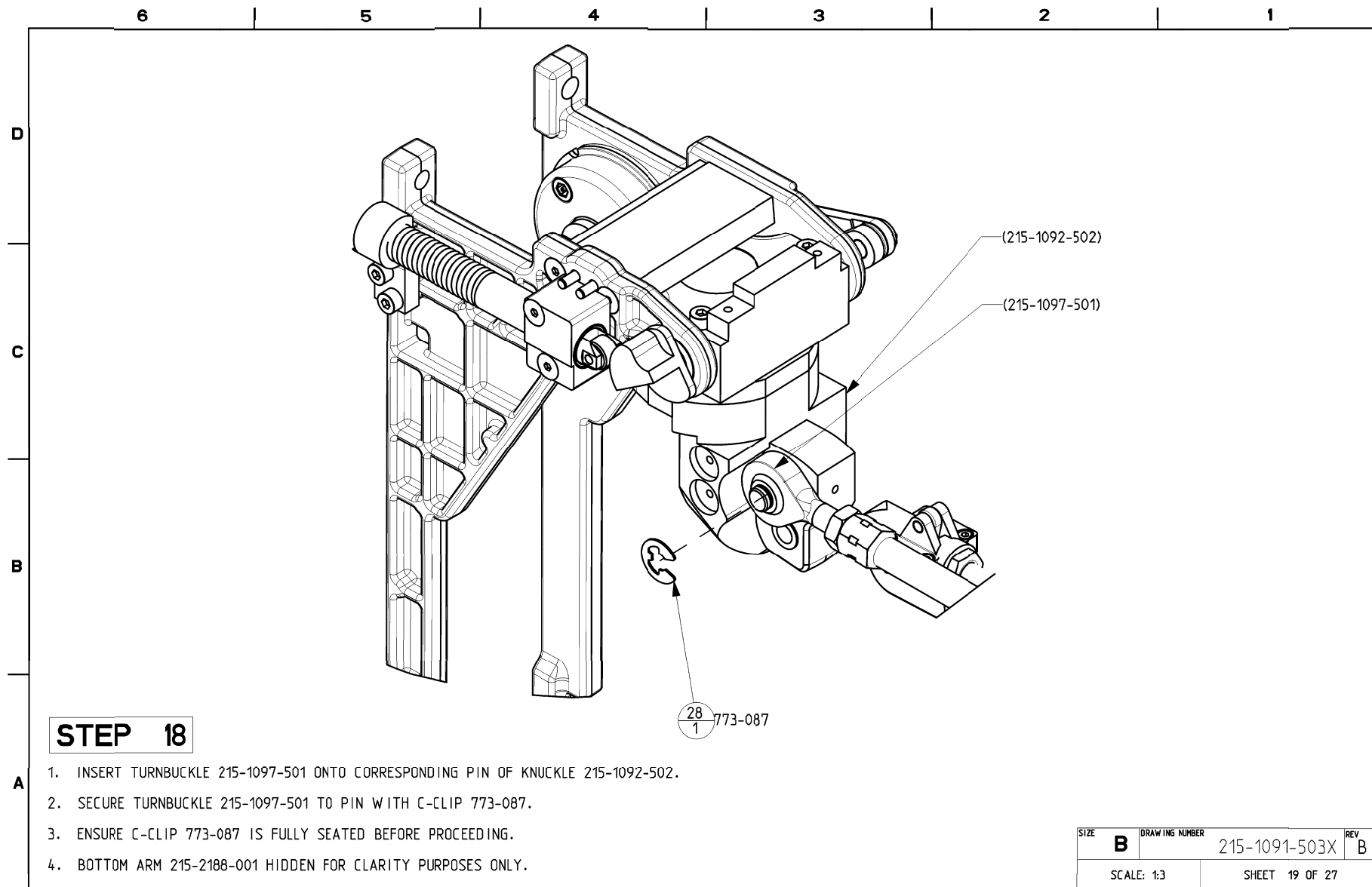


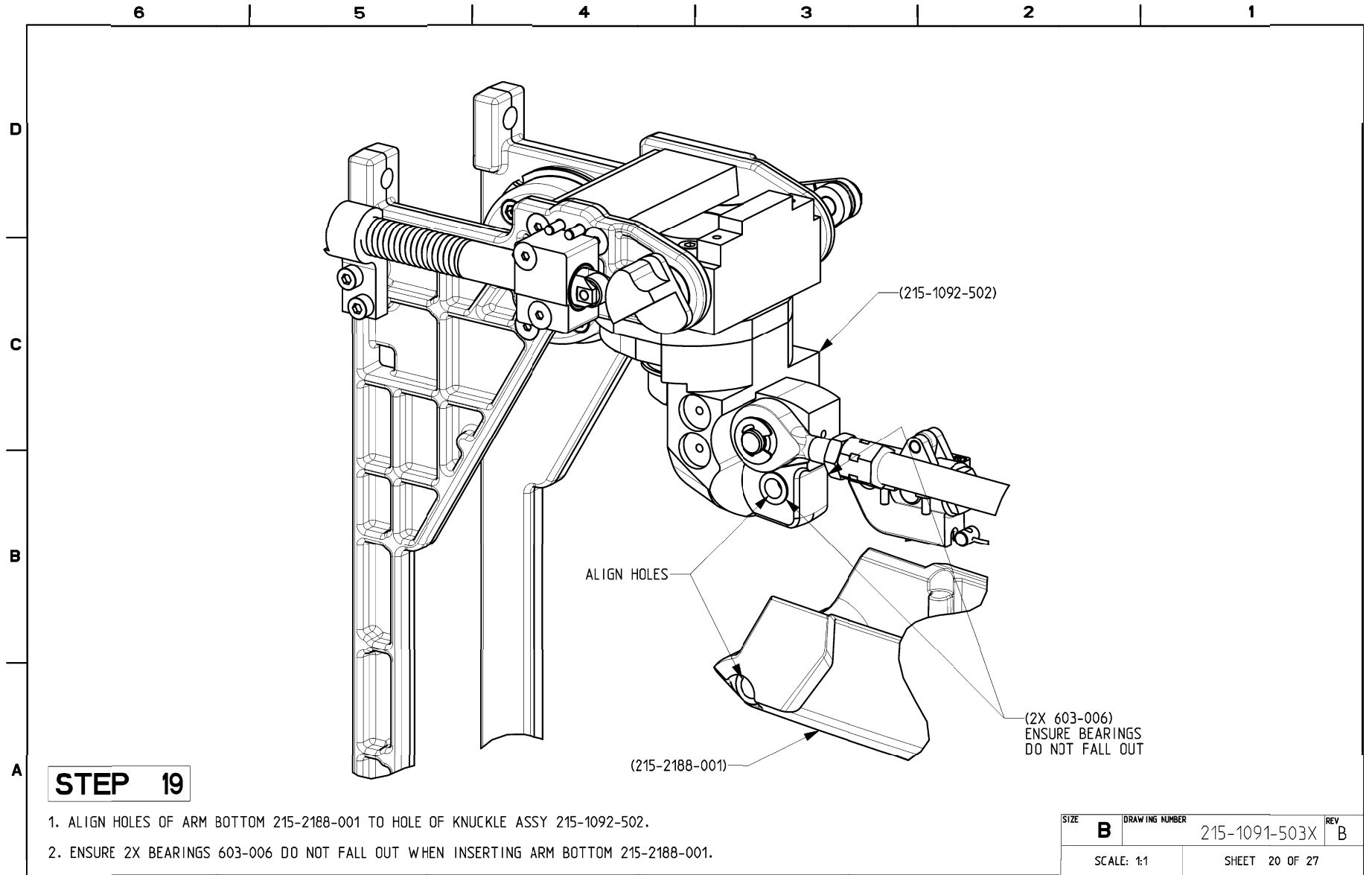


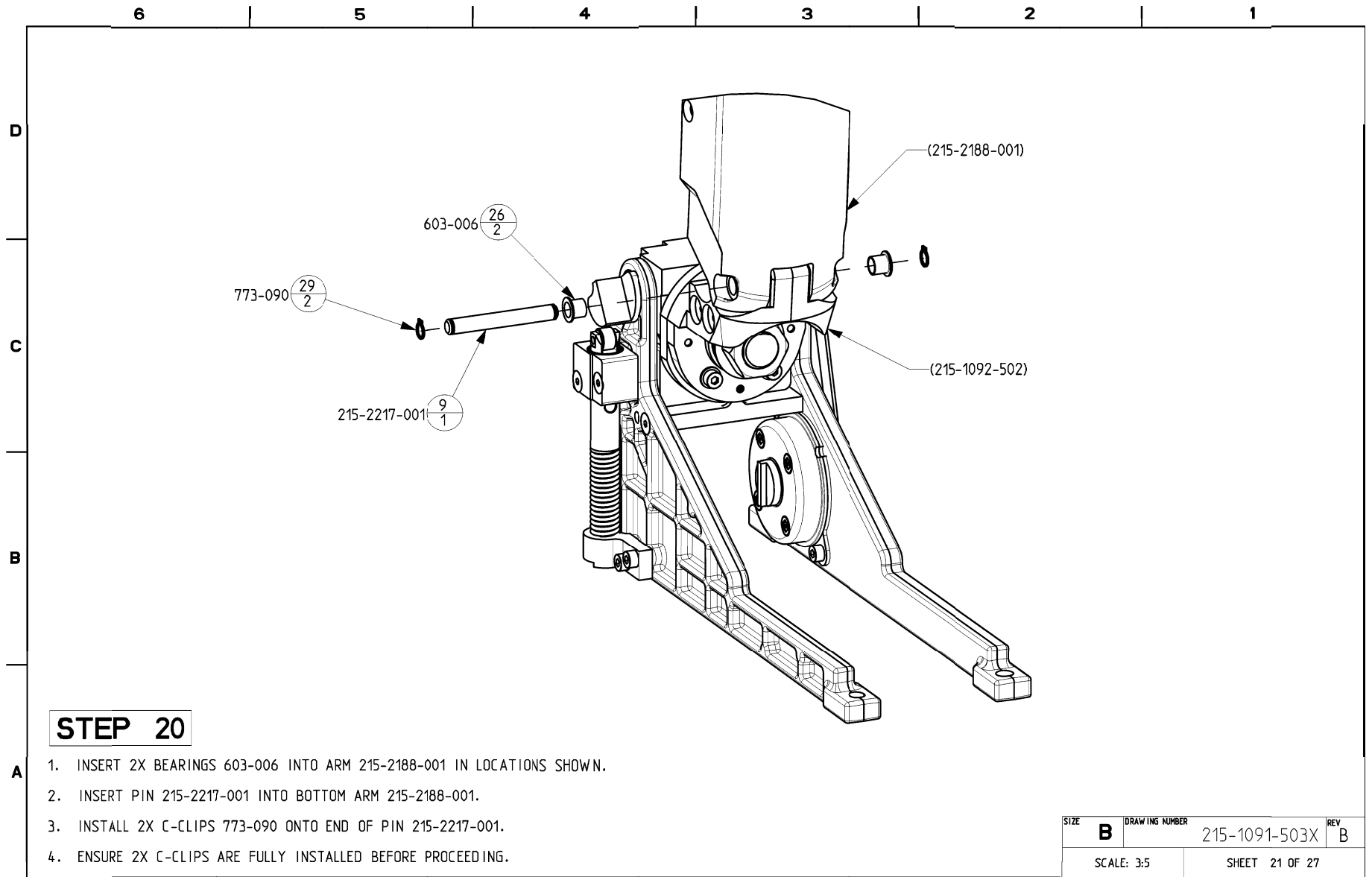
STEP 17

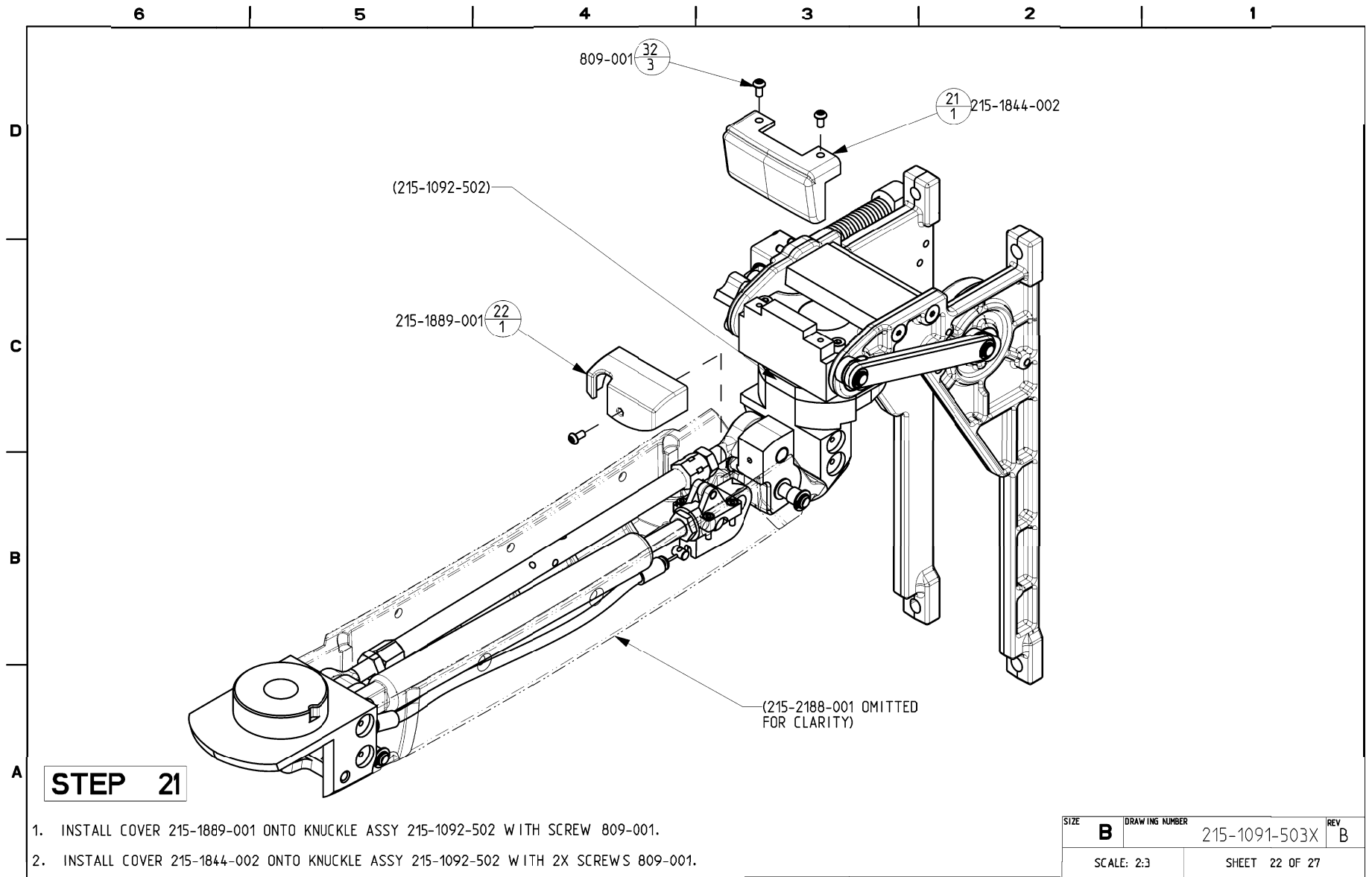
1. INSERT 2X BEARINGS 603-006 INTO ARM 215-2188-001 IN LOCATIONS SHOWN.
2. INSERT PIN 215-2217-001 INTO BOTTOM ARM 215-2188-001.
3. INSTALL 2X C-CLIPS 773-090 ONTO END OF PIN 215-2217-001.
4. ENSURE 2X C-CLIPS ARE FULLY INSTALLED BEFORE PROCEEDING.

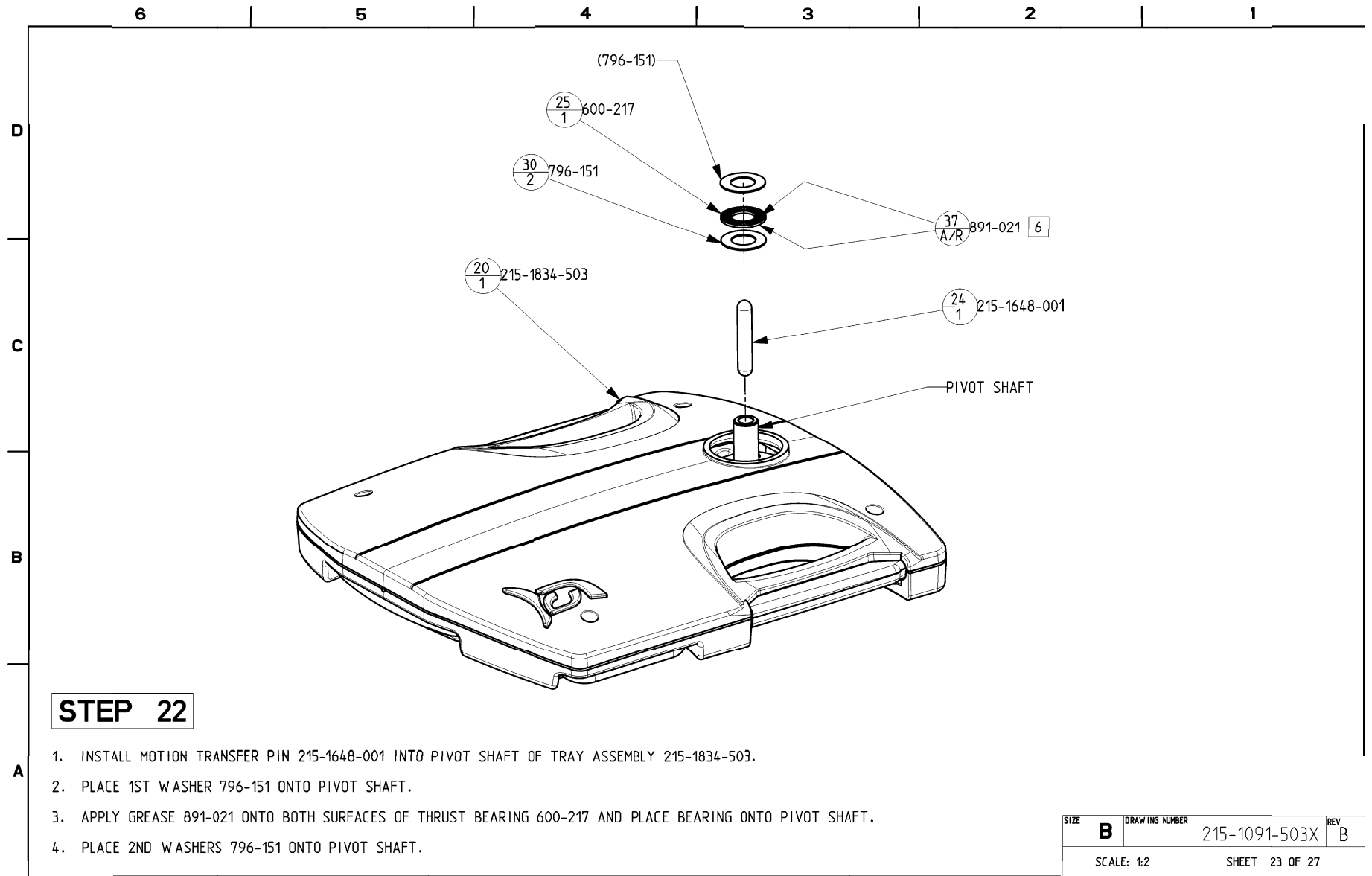
SIZE	DRAWING NUMBER	REV
B	215-1091-503X	B
SCALE: 5:4		SHEET 18 OF 27



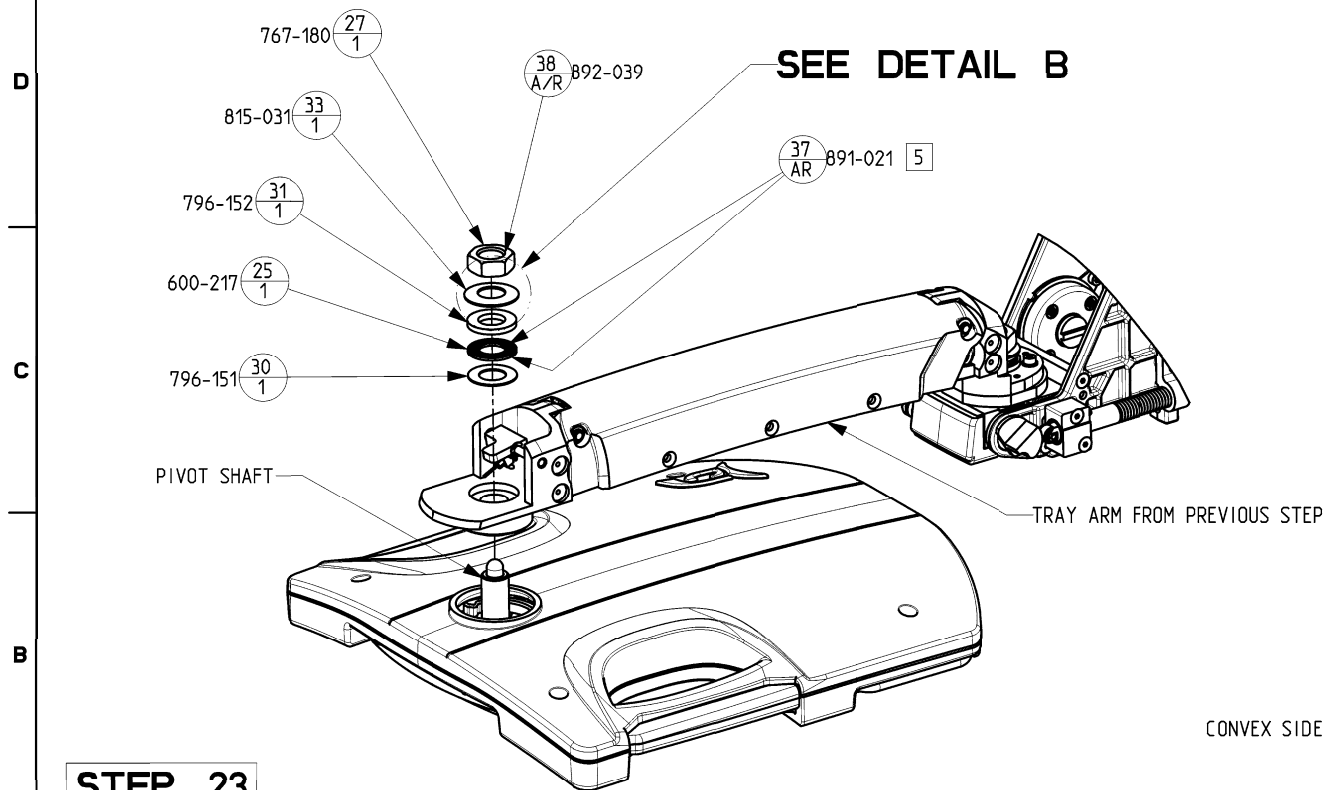






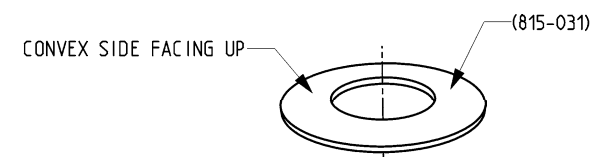


6 | 5 | 4 | 3 | 2 | 1



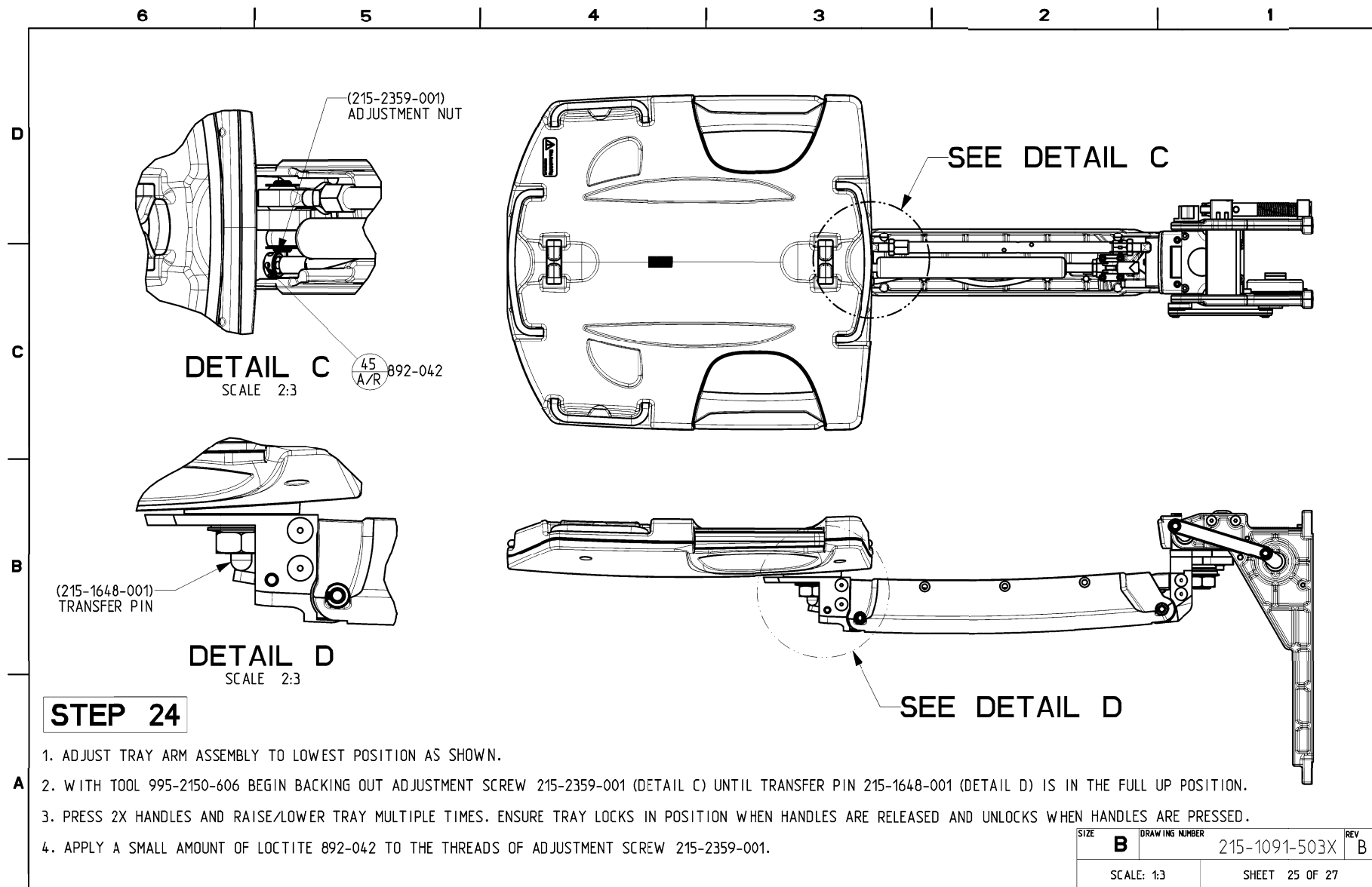
STEP 23

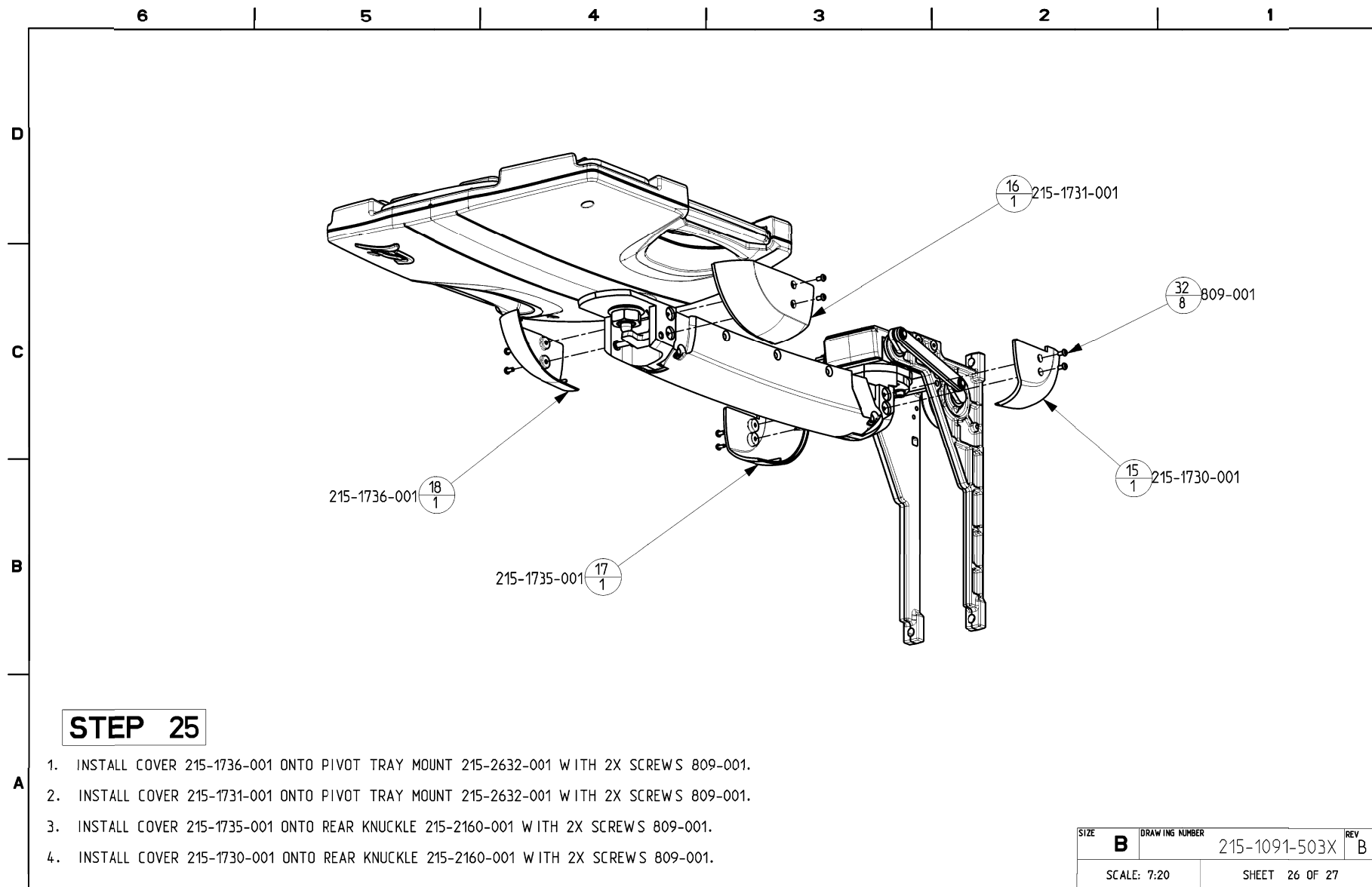
1. PLACE TRAY ASSEMBLY FROM PREVIOUS STEP ONTO PIVOT SHAFT.
2. PLACE WASHER 796-151 ONTO PIVOT SHAFT.
3. APPLY GREASE 891-021 TO BOTH SURFACES OF THRUST BEARING 600-217 AND PLACE BEARING ONTO PIVOT SHAFT.
4. PLACE WASHERS 796-152 AND 815-031 WITH CONVEX SIDE UP (SEE DETAIL B) ONTO PIVOT SHAFT.
5. APPLY A SMALL AMOUNT OF LOCTITE 892-039 ONTO THREADS OF NUT 767-180 AND INSTALL NUT ONTO PIVOT SHAFT.
FULLY TIGHTEN NUT THEN LOOSEN 1/2 TURN.

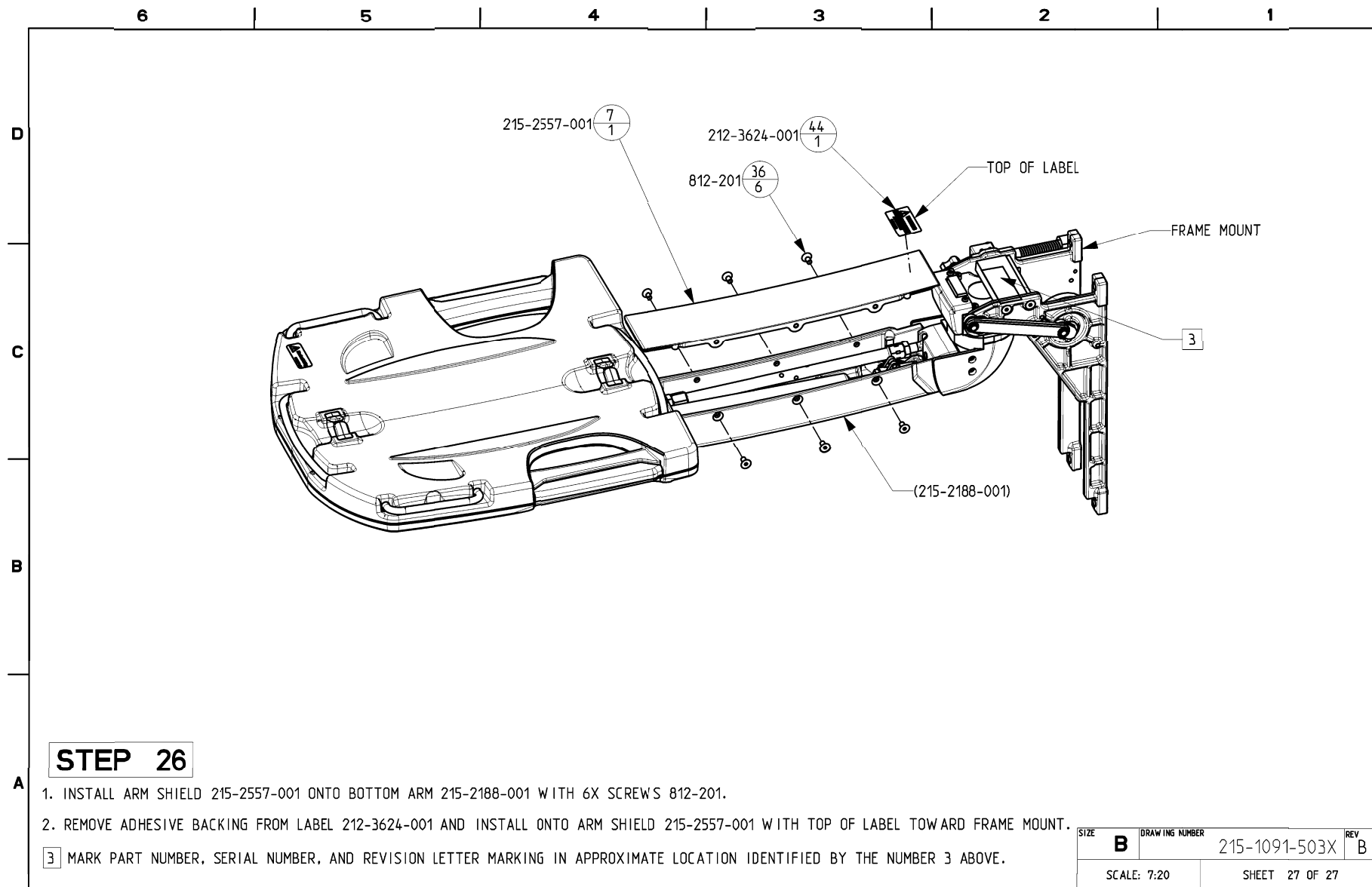


DETAIL B

SIZE	B	DRAWING NUMBER	215-1091-503X	REV	B
SCALE: 2:5		SHEET 24 OF 27			







6

5

4


3

2

1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

2.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.

3. FOR STAND ALONE SUB-ASSEMBLY JOBS USE MAP 992-2150-004.

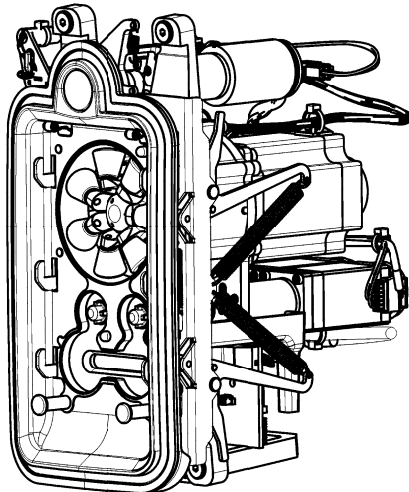
4. PART NUMBER, REVISION LETTER, AND SERIAL NUMBER MARKING.

5. ACCEPTABLE TO USE FIXTURE 995-2150-356 AS ASSEMBLY AID.

6. -504S: TEST PER MTP 907-2150-022, FIELD SERVICE TEST MATRIX.
-504S IS MADE FROM ONE 215-1660-504

REVISION HISTORY

REV	ECN	DATE
P9	NOT RELEASED	07/03/13
A	CN045838ECN	07/25/13
B	CN047451ECN	08/29/13
C	CN057098ECN	09/02/14
D	CN058030ECN	10/23/14
E	CN059844ECN	02/06/15
F	CN059958ECN	02/27/15
G	CN061102ECN	04/25/15
H	CN070228ECN	12/09/16




3D VIEW

TABULATION

PART NUMBER	REV	DESCRIPTION	PART NUMBER	6	DESCRIPTION
215-1660-504	H	ASSY,FLUIDICS	215-1660-504S		ASSY,FLUIDICS SERVICE

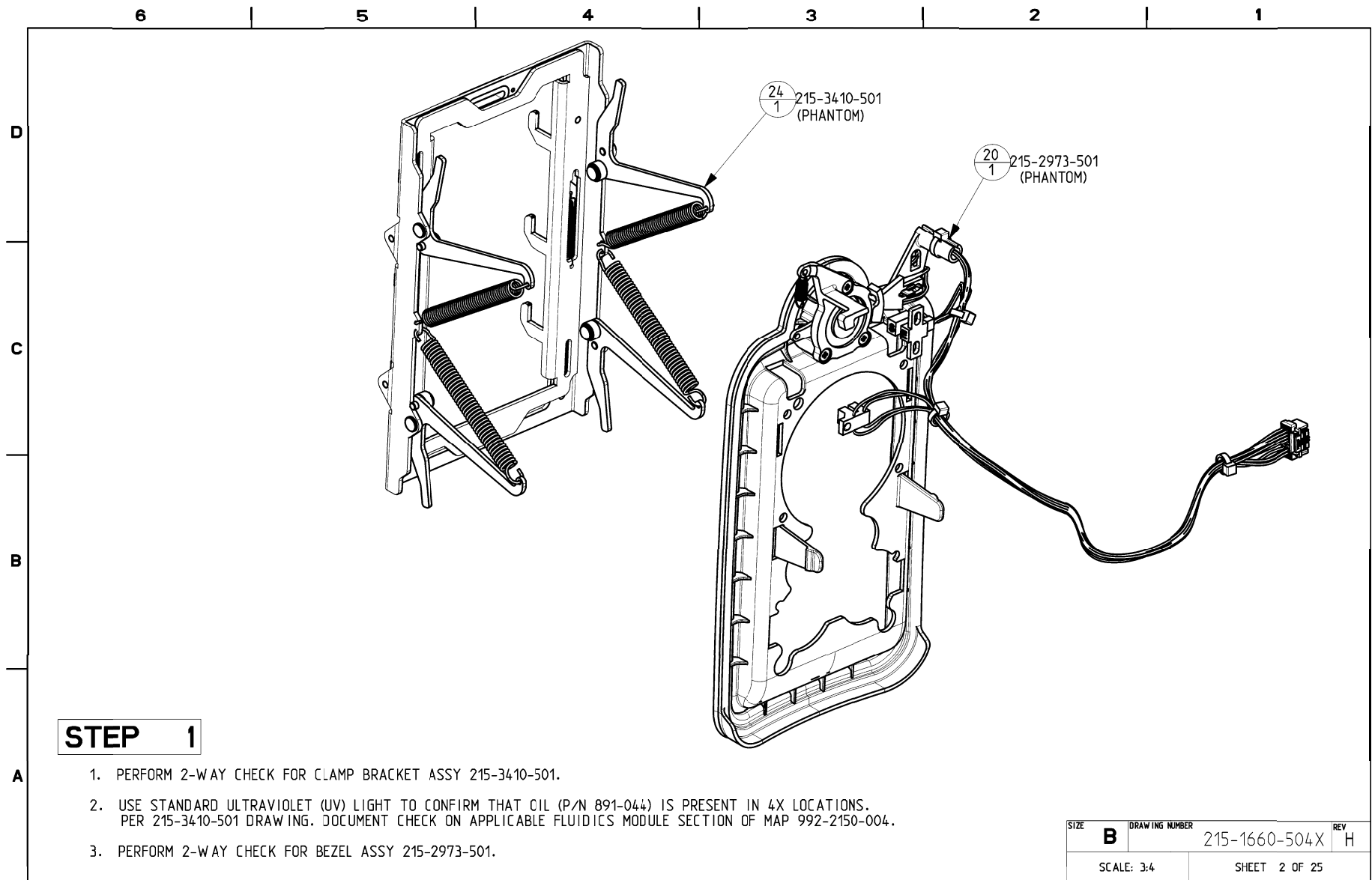
SEE SEPARATE PARTS LIST

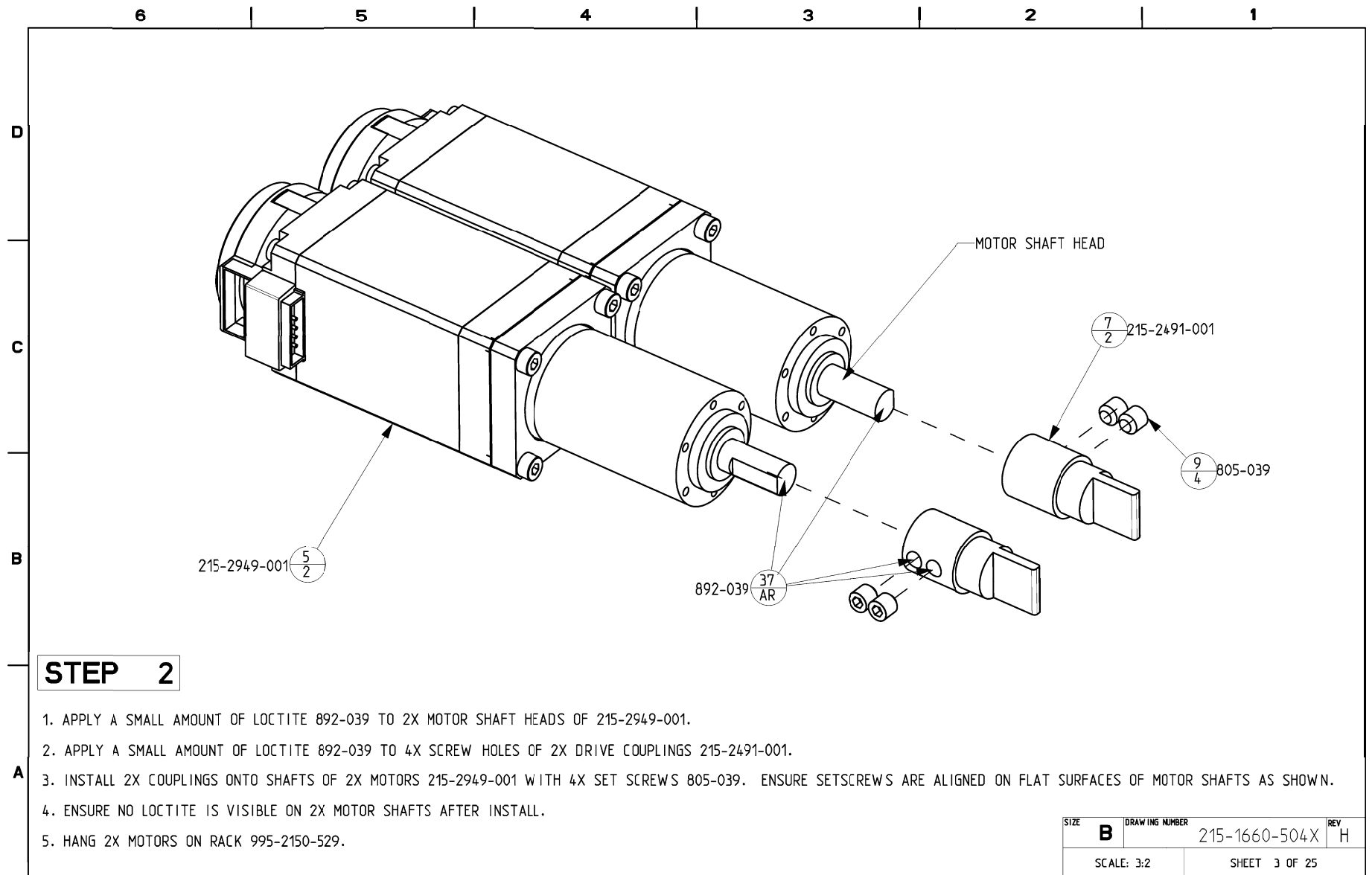
QTY		PART NUMBER		DESCRIPTION		MATERIAL/MANUFACTURER		ITEM			
BILL OF MATERIAL											
BY K.BARRY		DATE 07/03/13		<div>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.</div> <div> Irvine, California 92618</div>		DESCRIPTION ASSY,FLUIDICS					
CHECKED B.LEE		DATE 07/03/13				SIZE B		DRAWING NUMBER 215-1660-504X		REV H	
APPROVED D.KASTELIC		DATE 07/03/13				SCALE: 1:2		SHEET 1 OF 25			
FORMAT REVISION 2/23/2007											
PDMLINK MODEL ATTRIBUTES				NAME: 215-1660-504_PROC				VERSION: H.0			

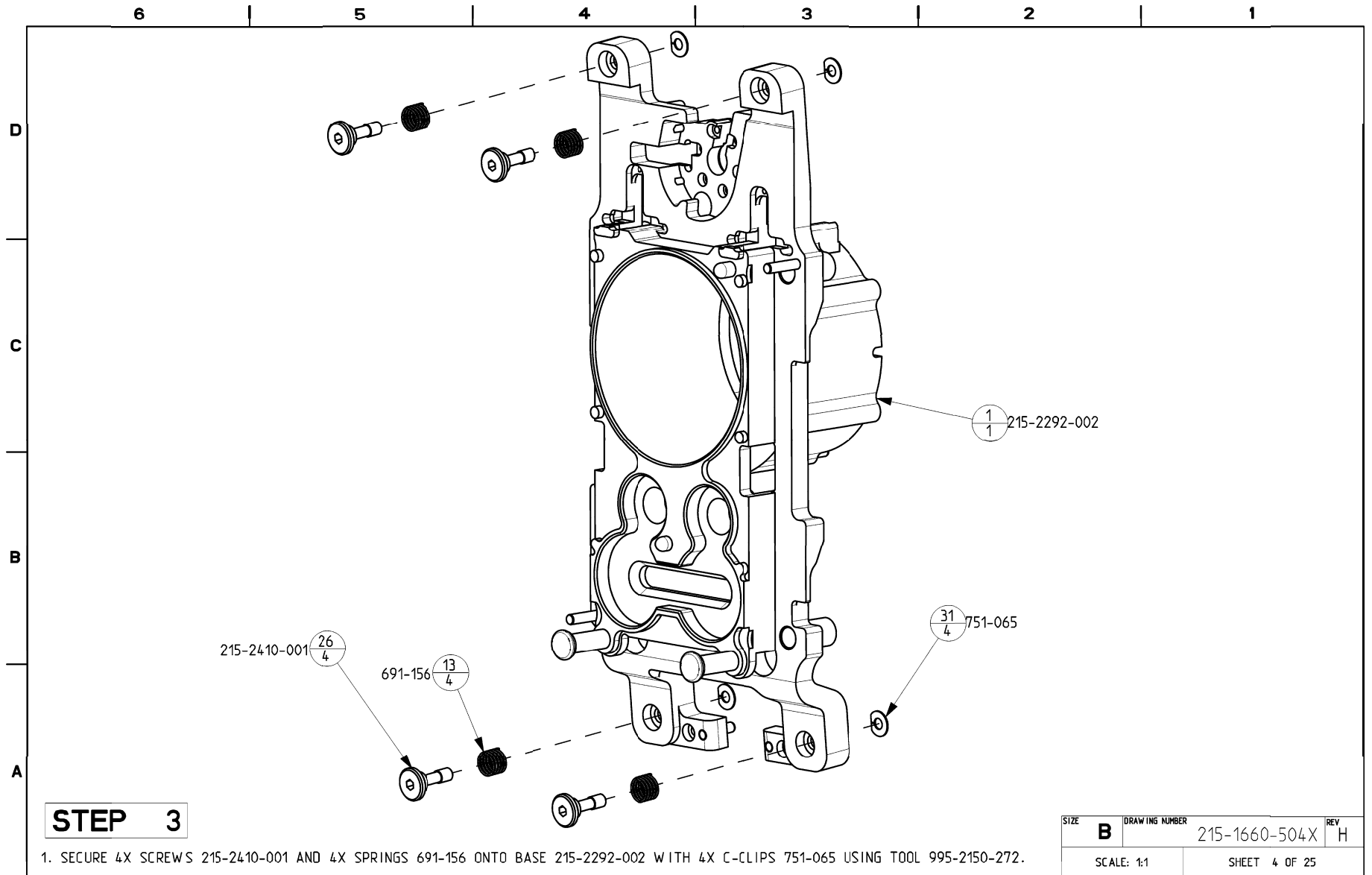
DRAWING NUMBER

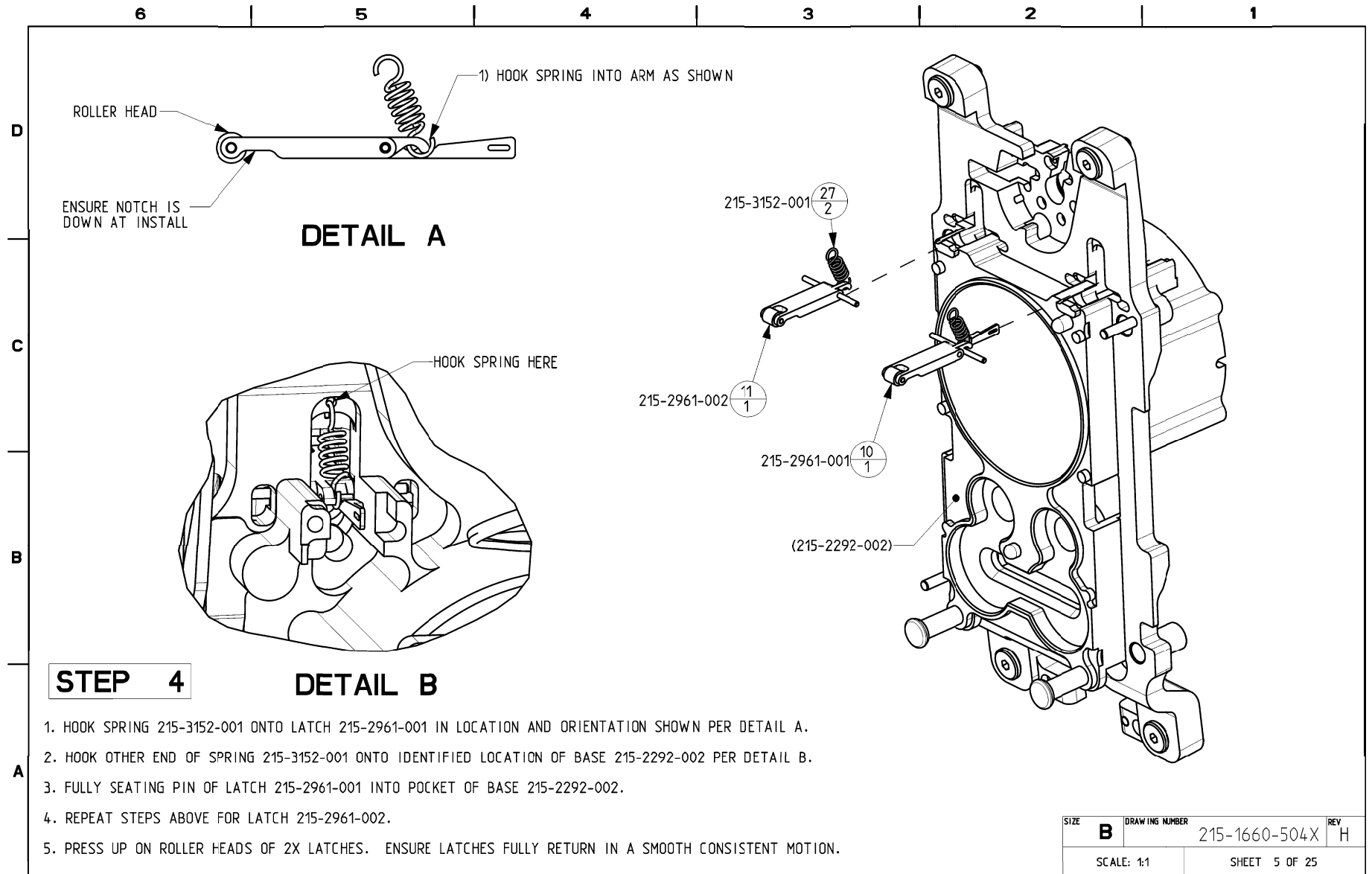
215-1660-504X

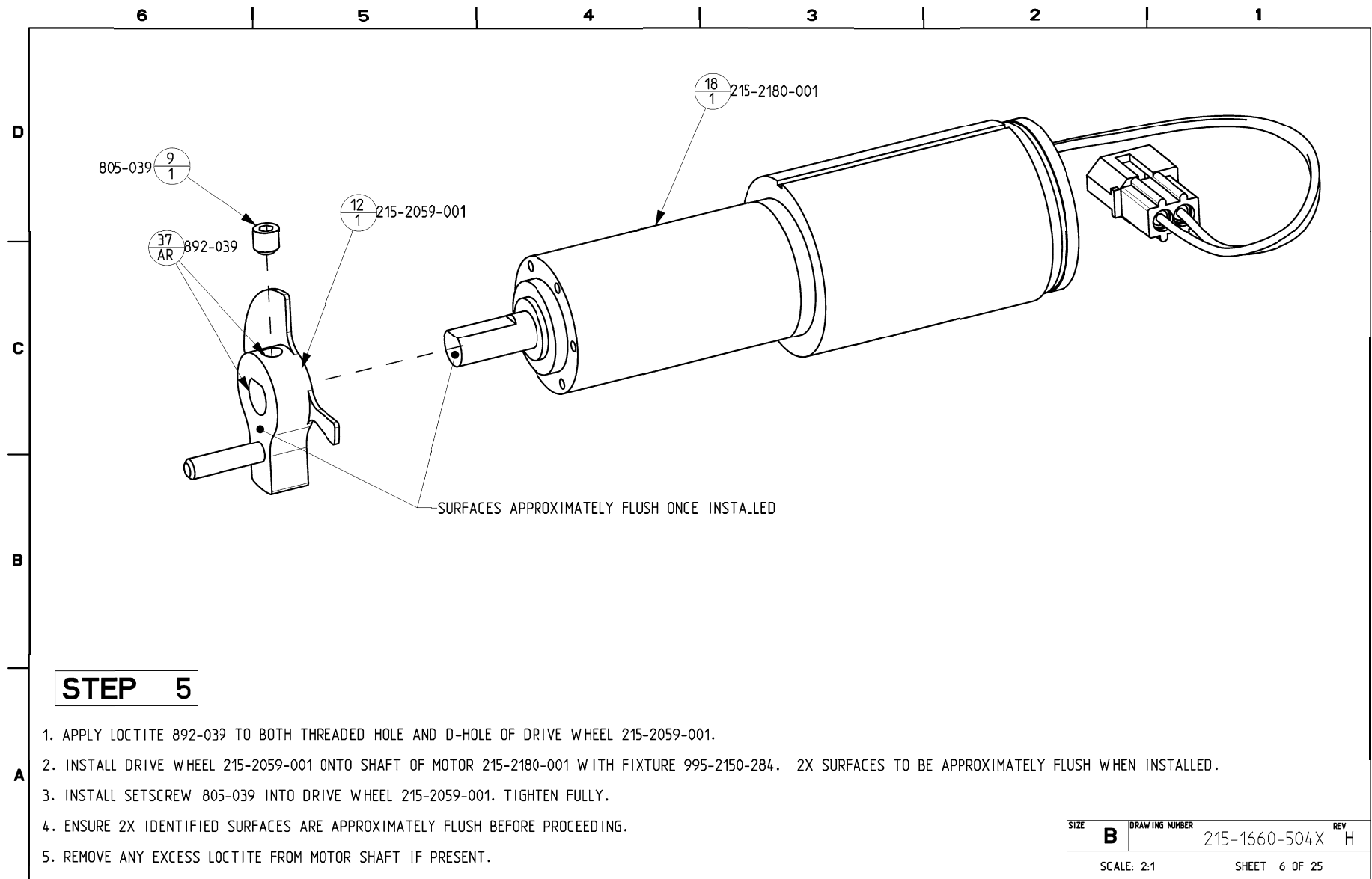
REV
H

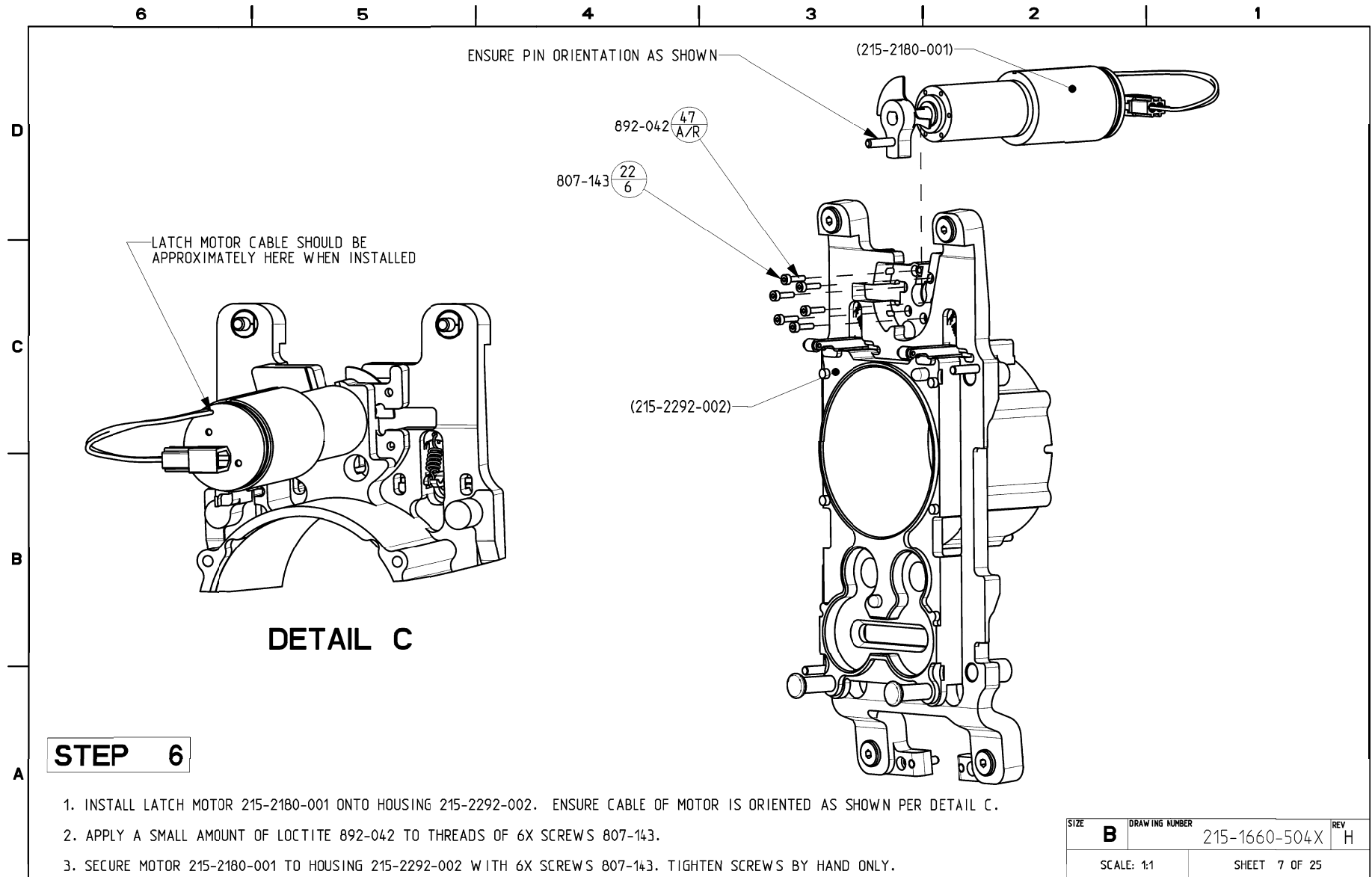


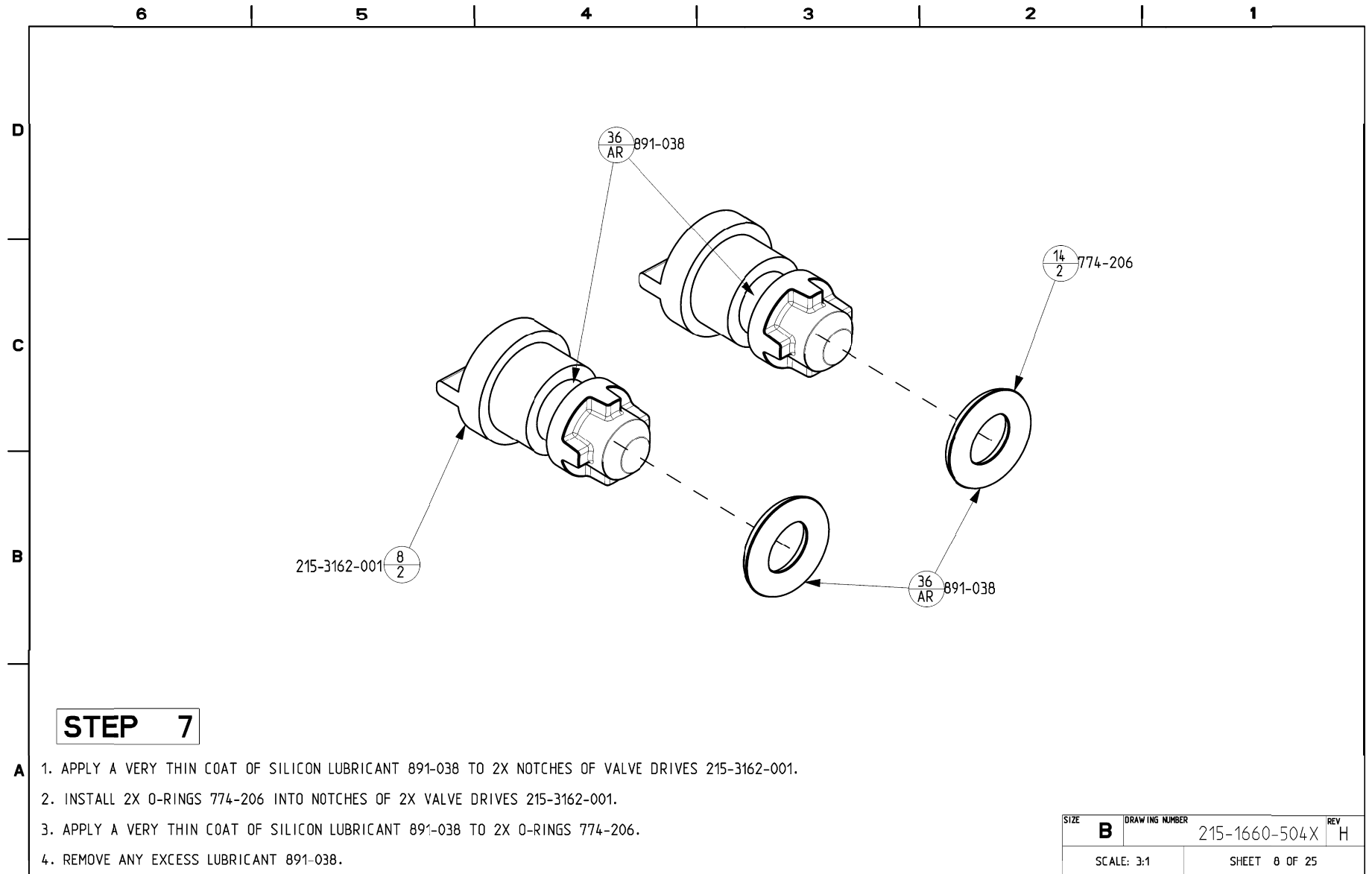


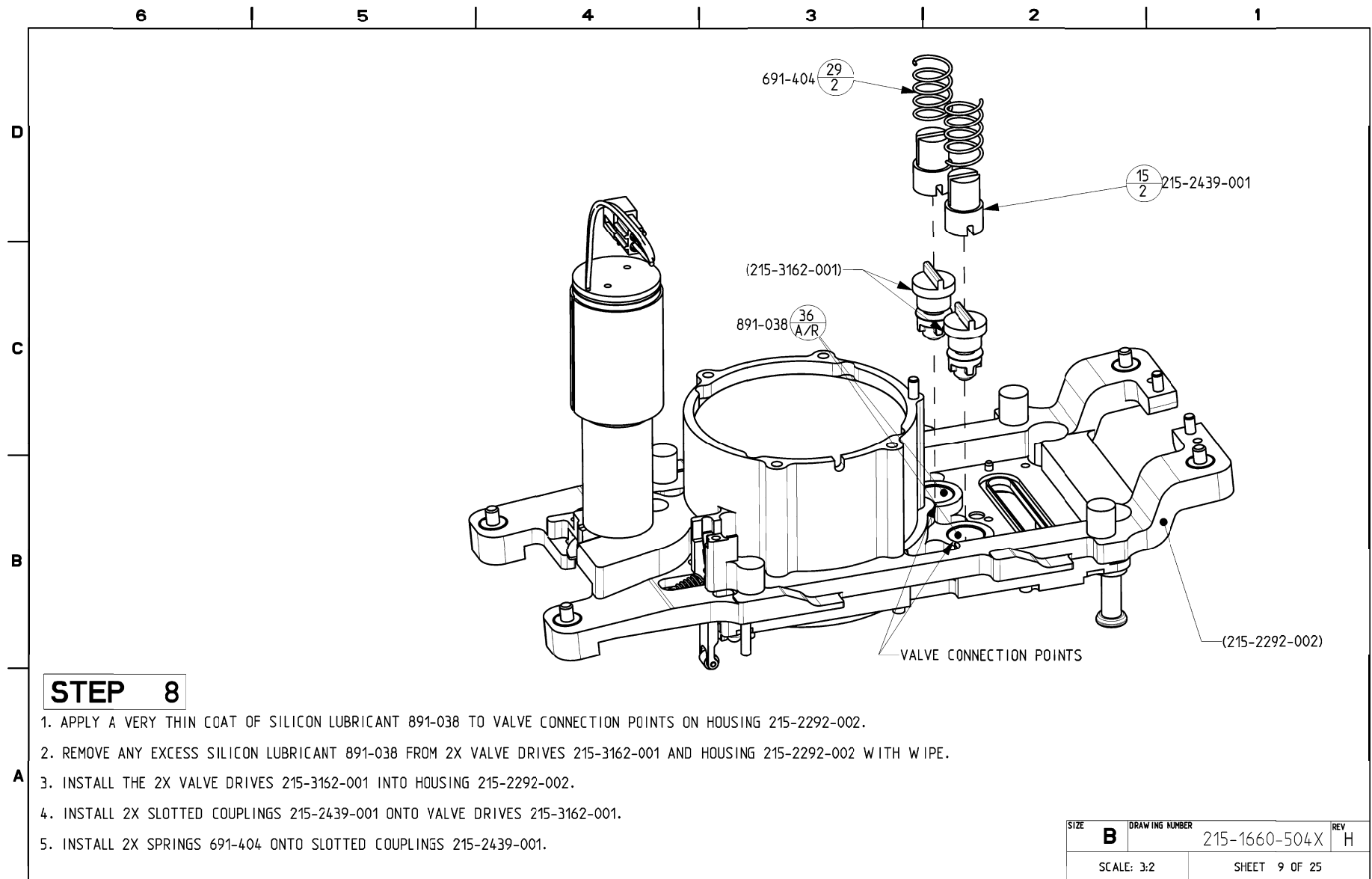


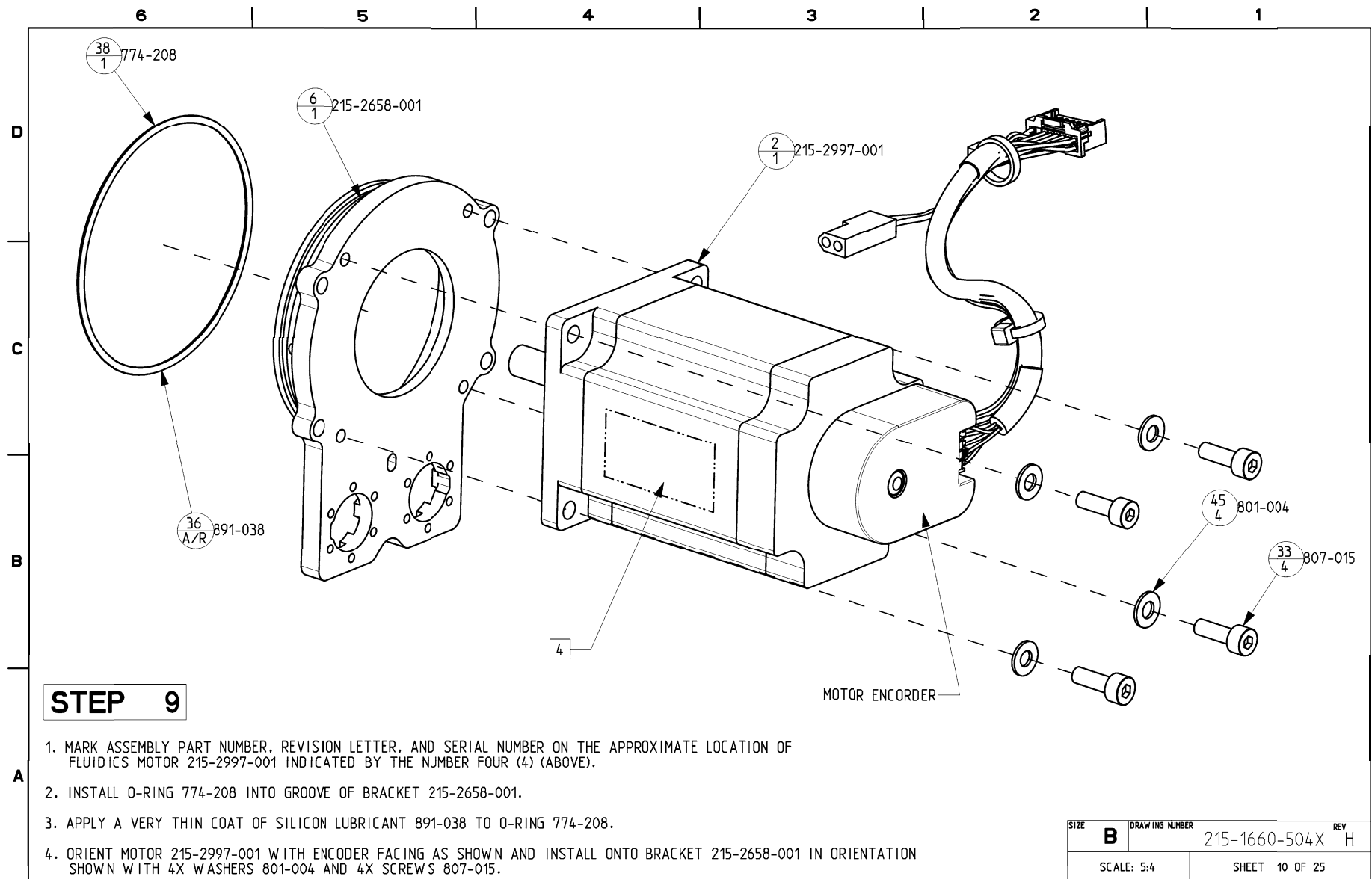


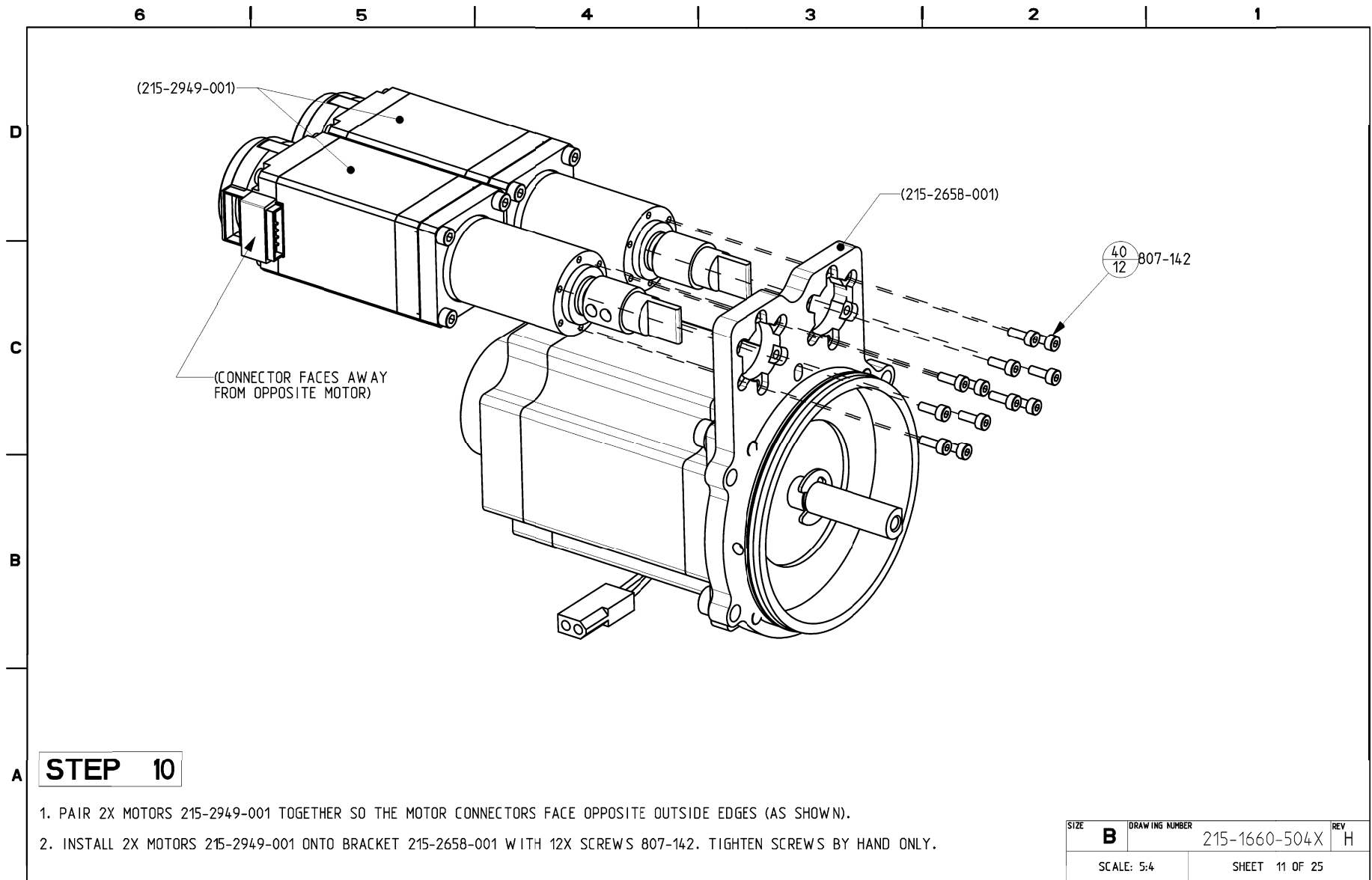


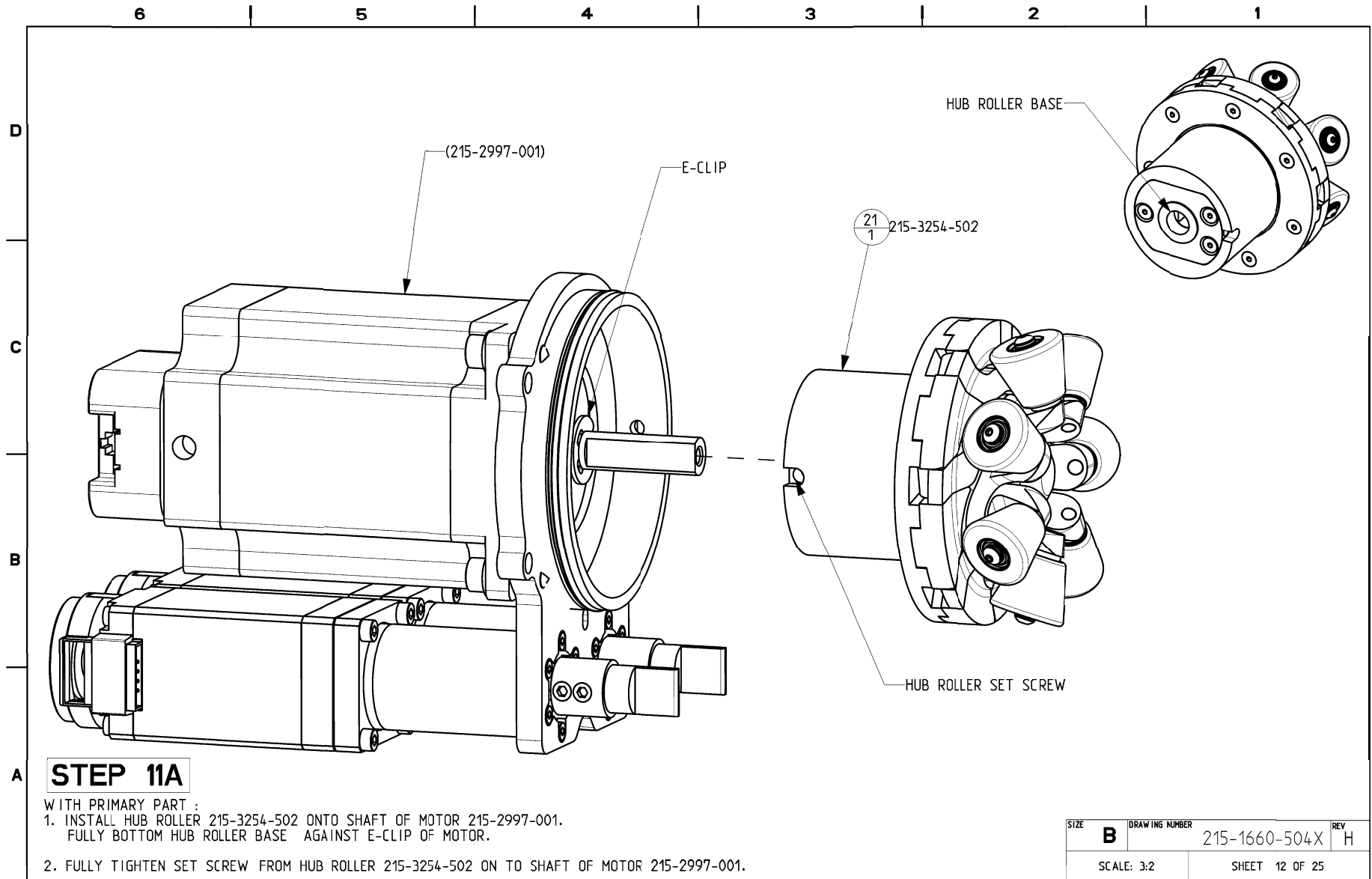


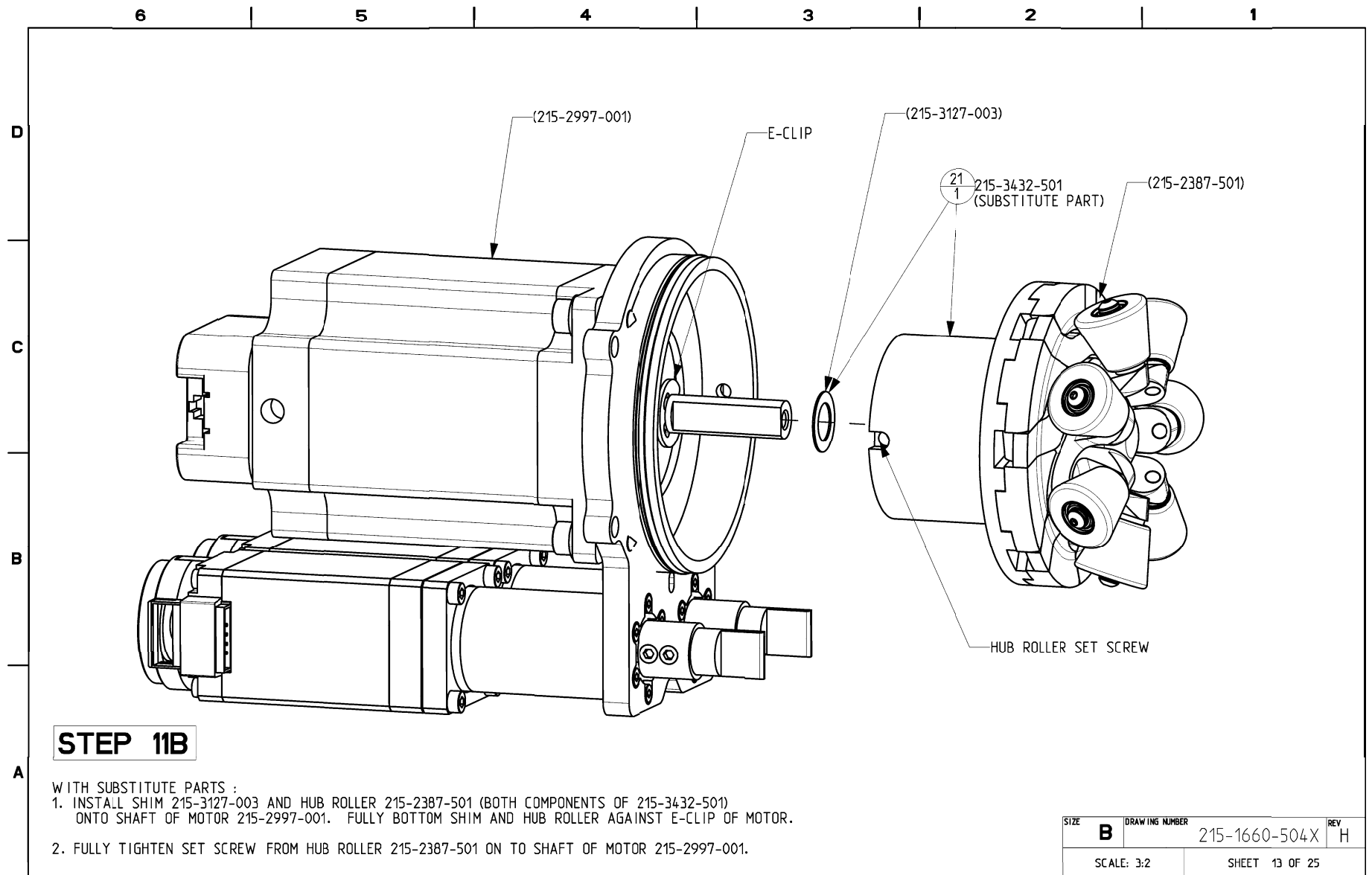


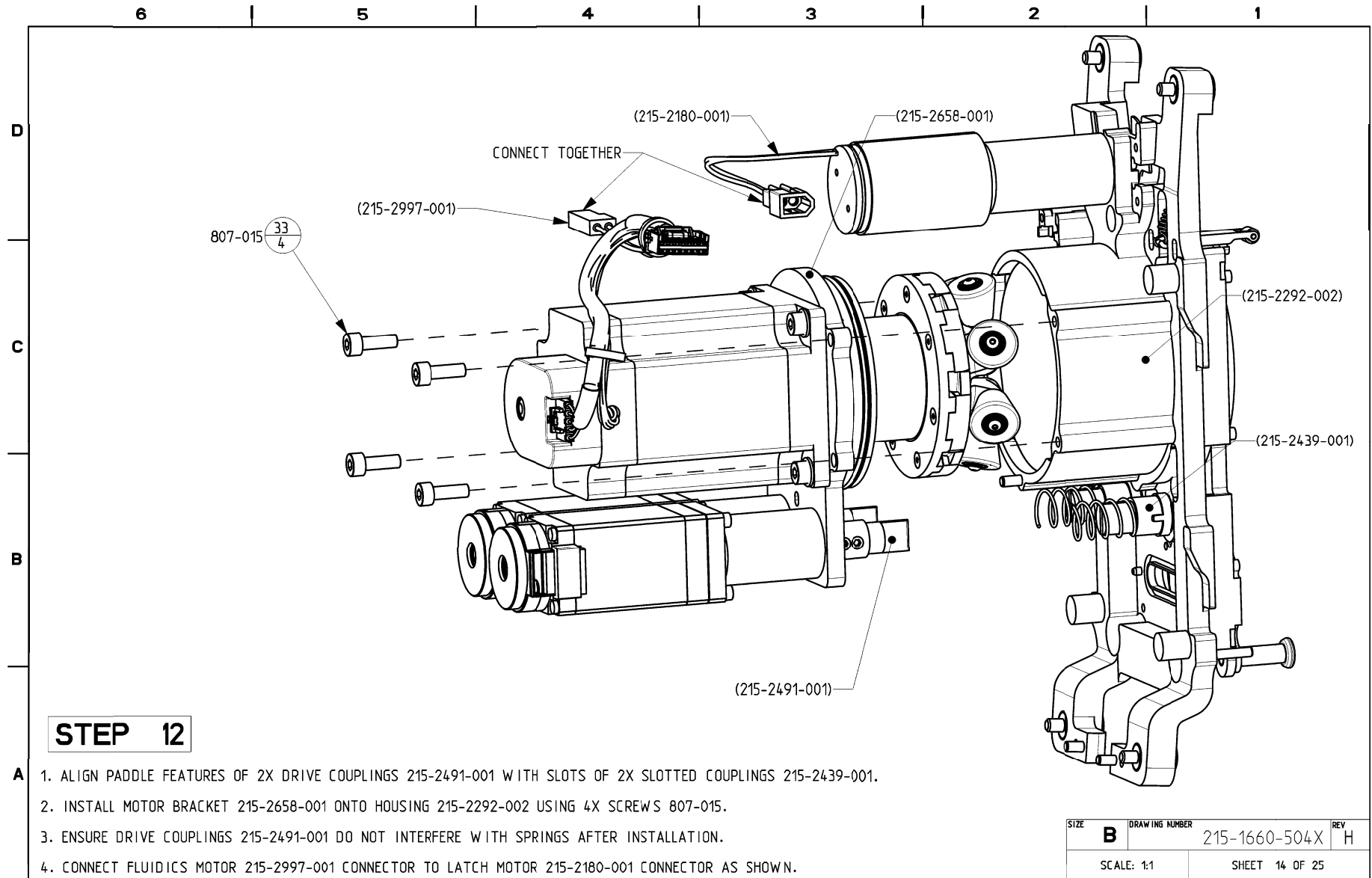


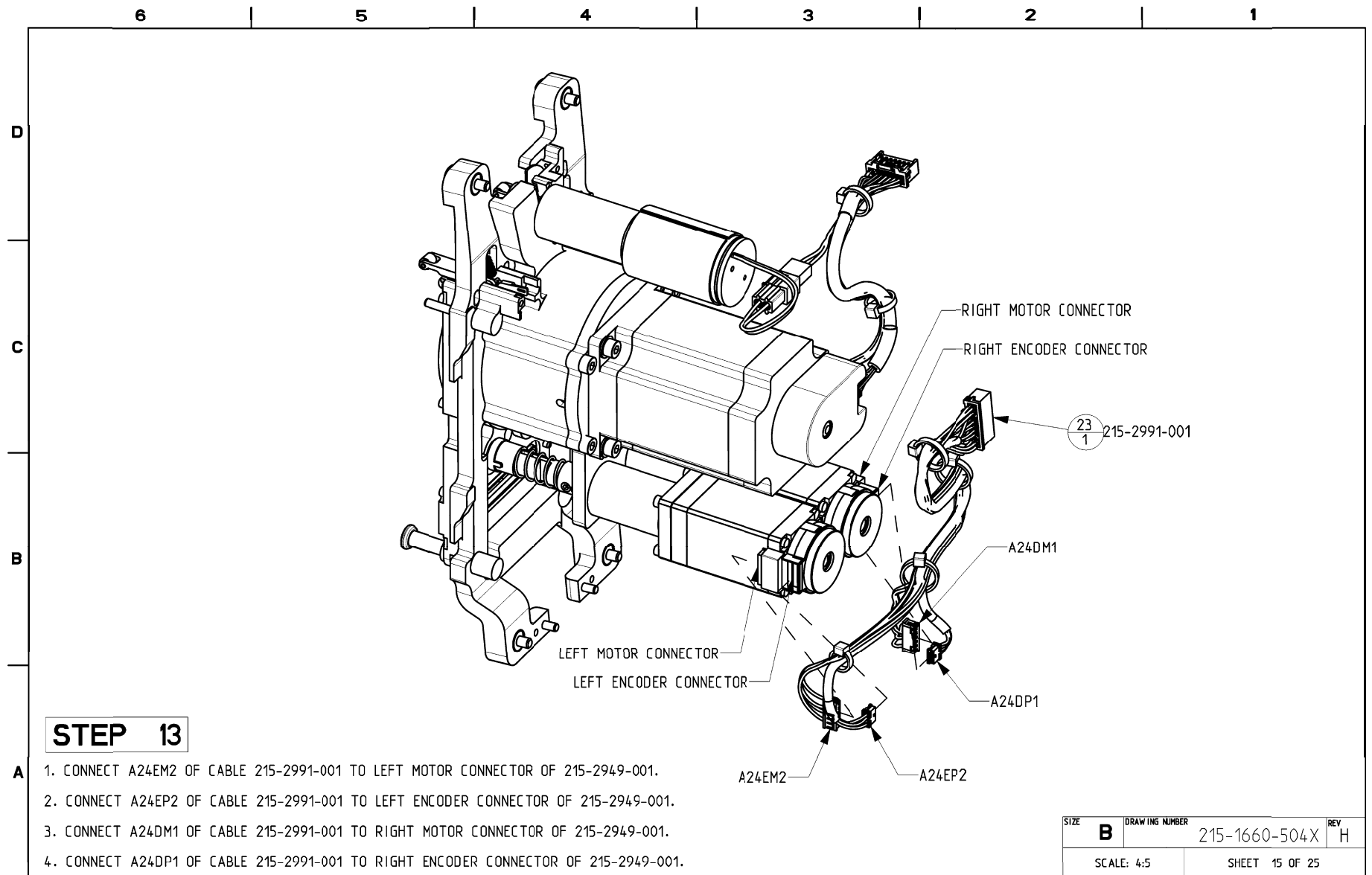


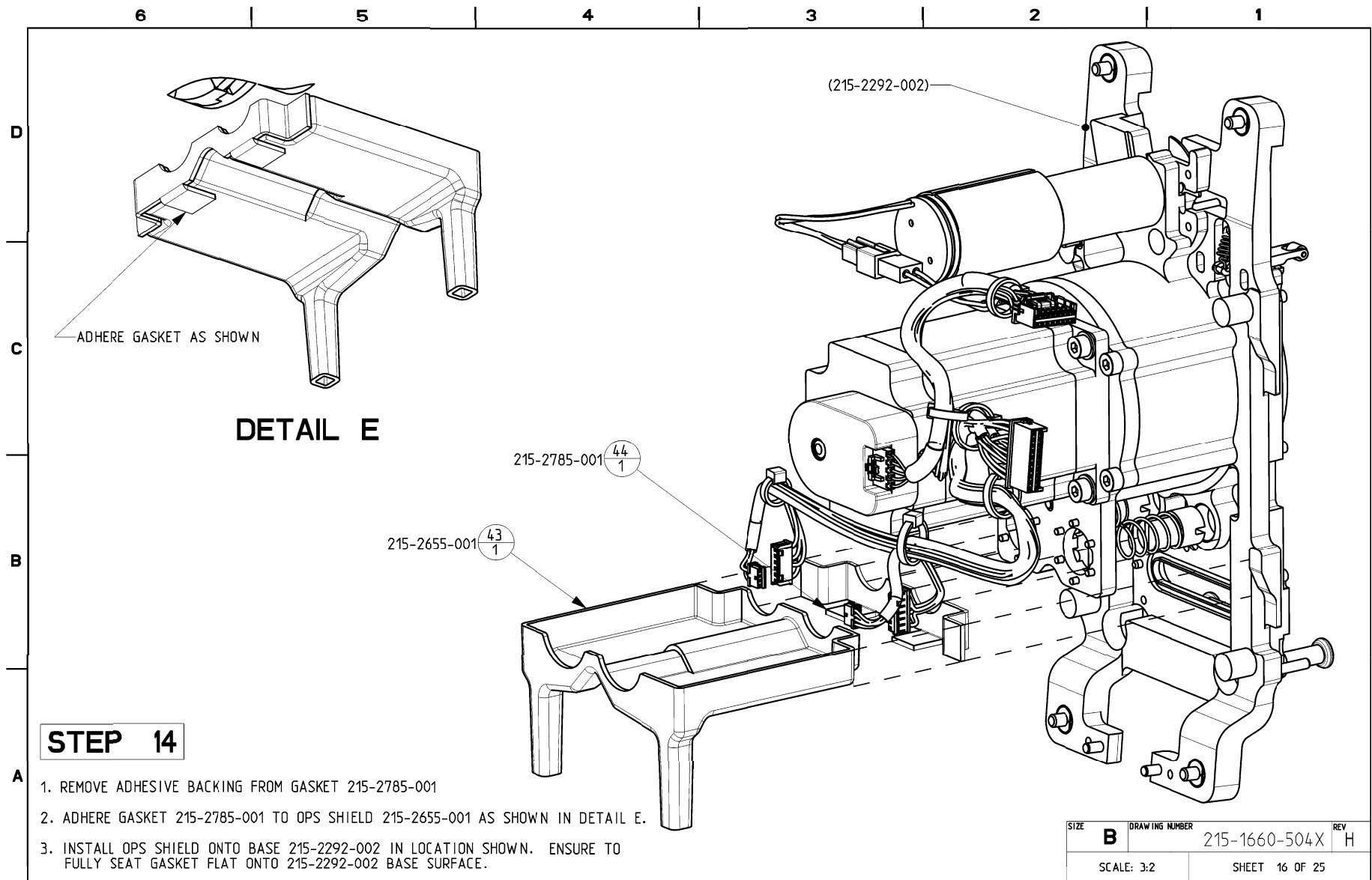


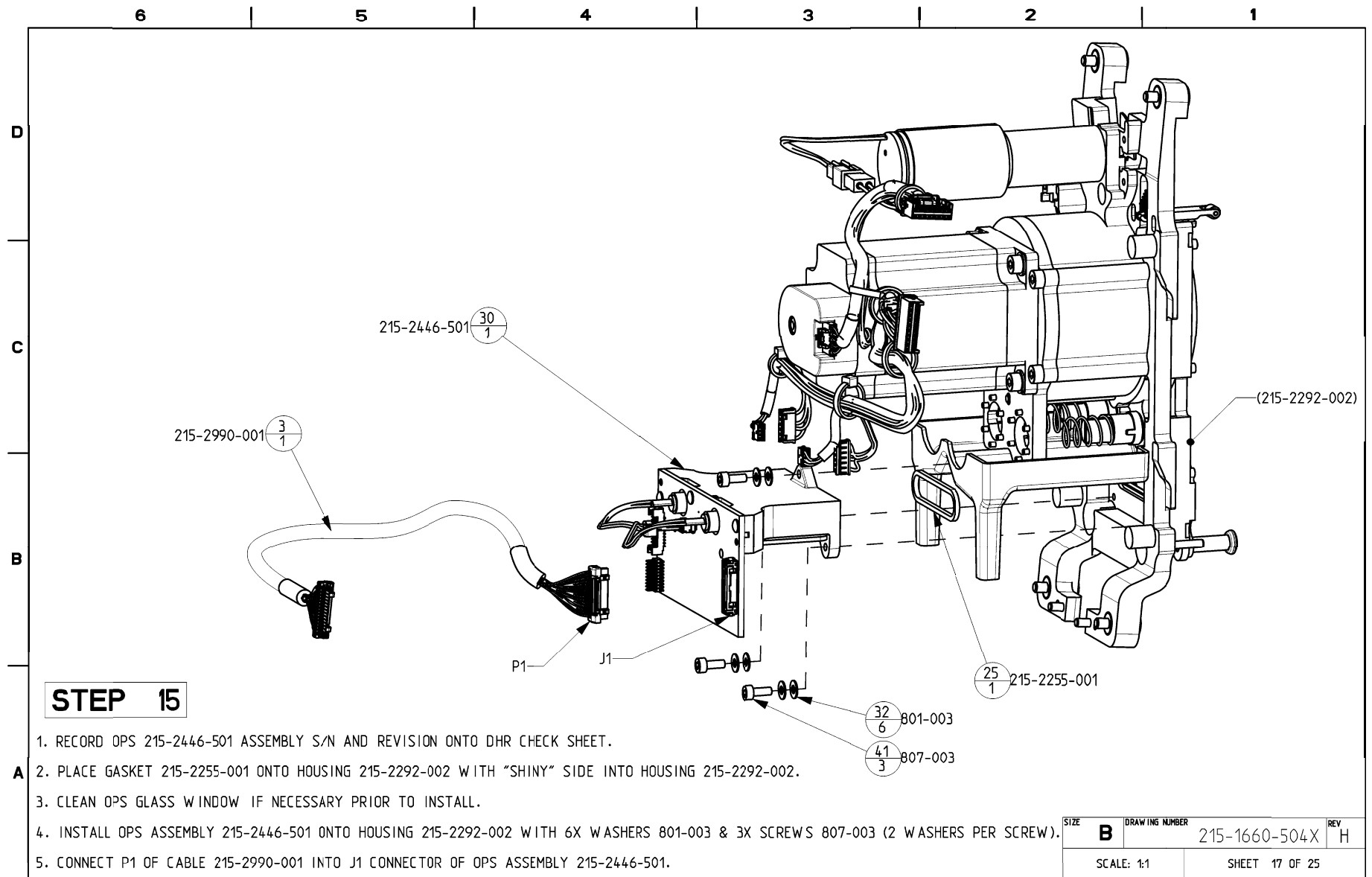


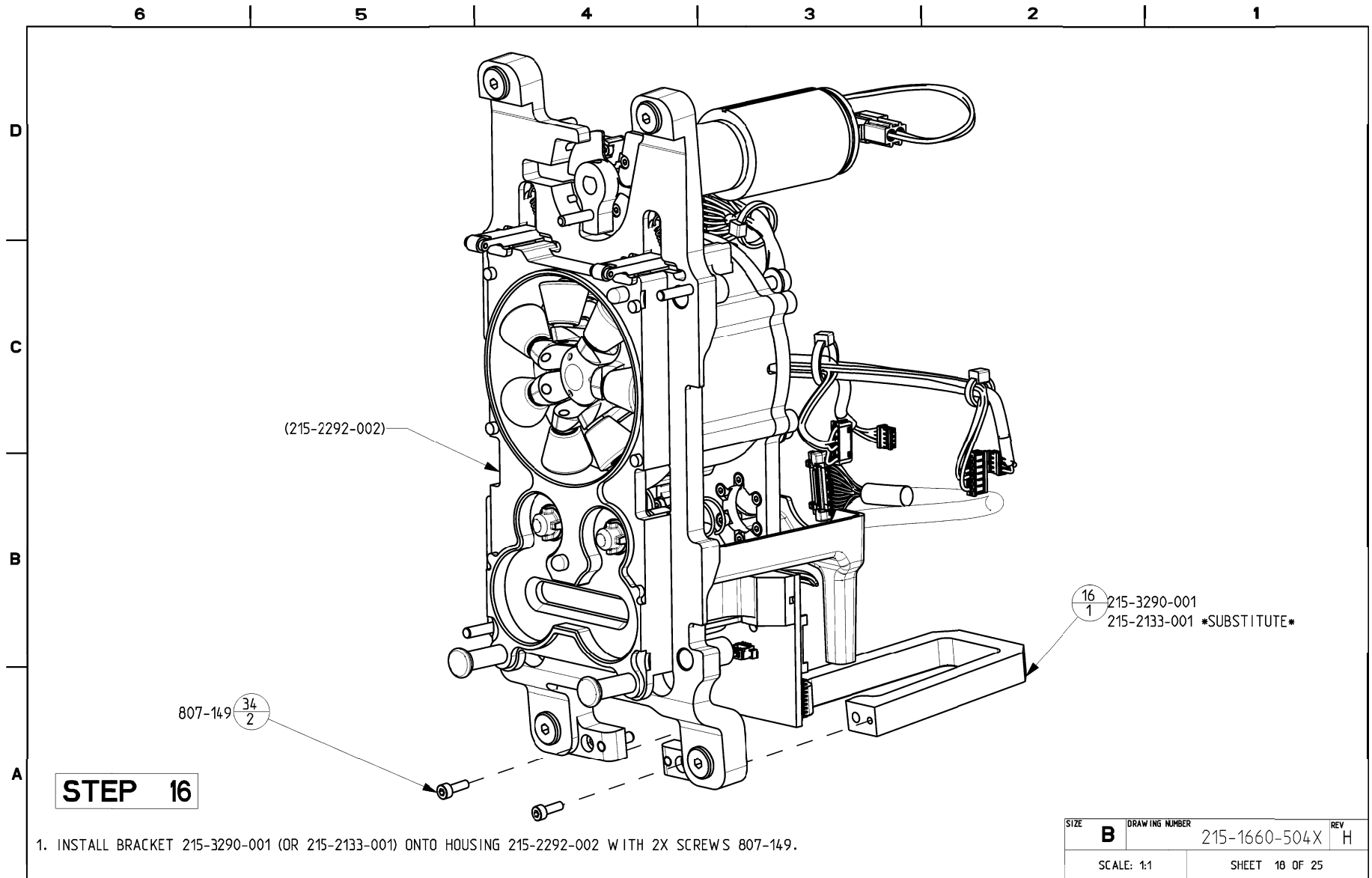


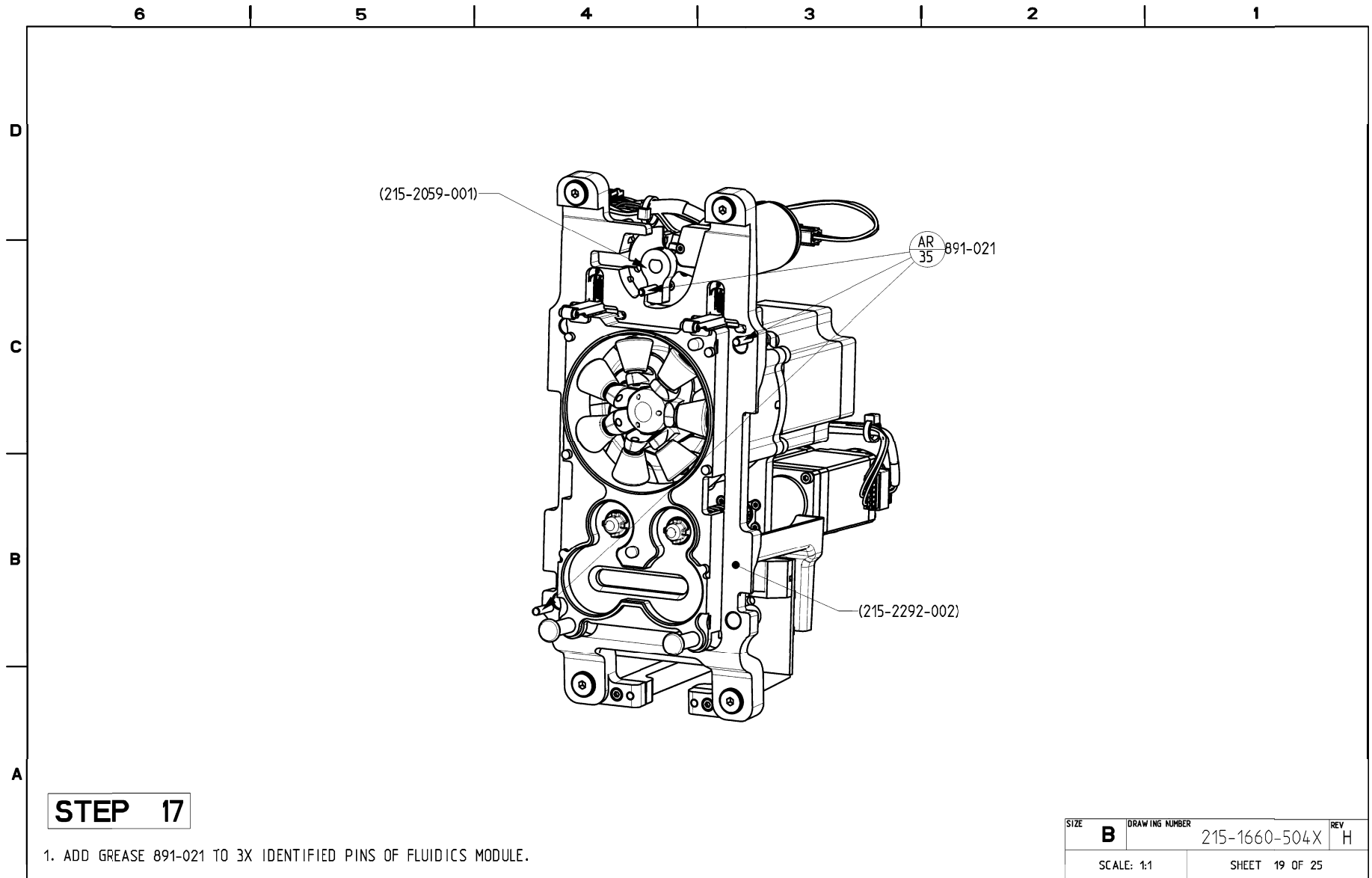




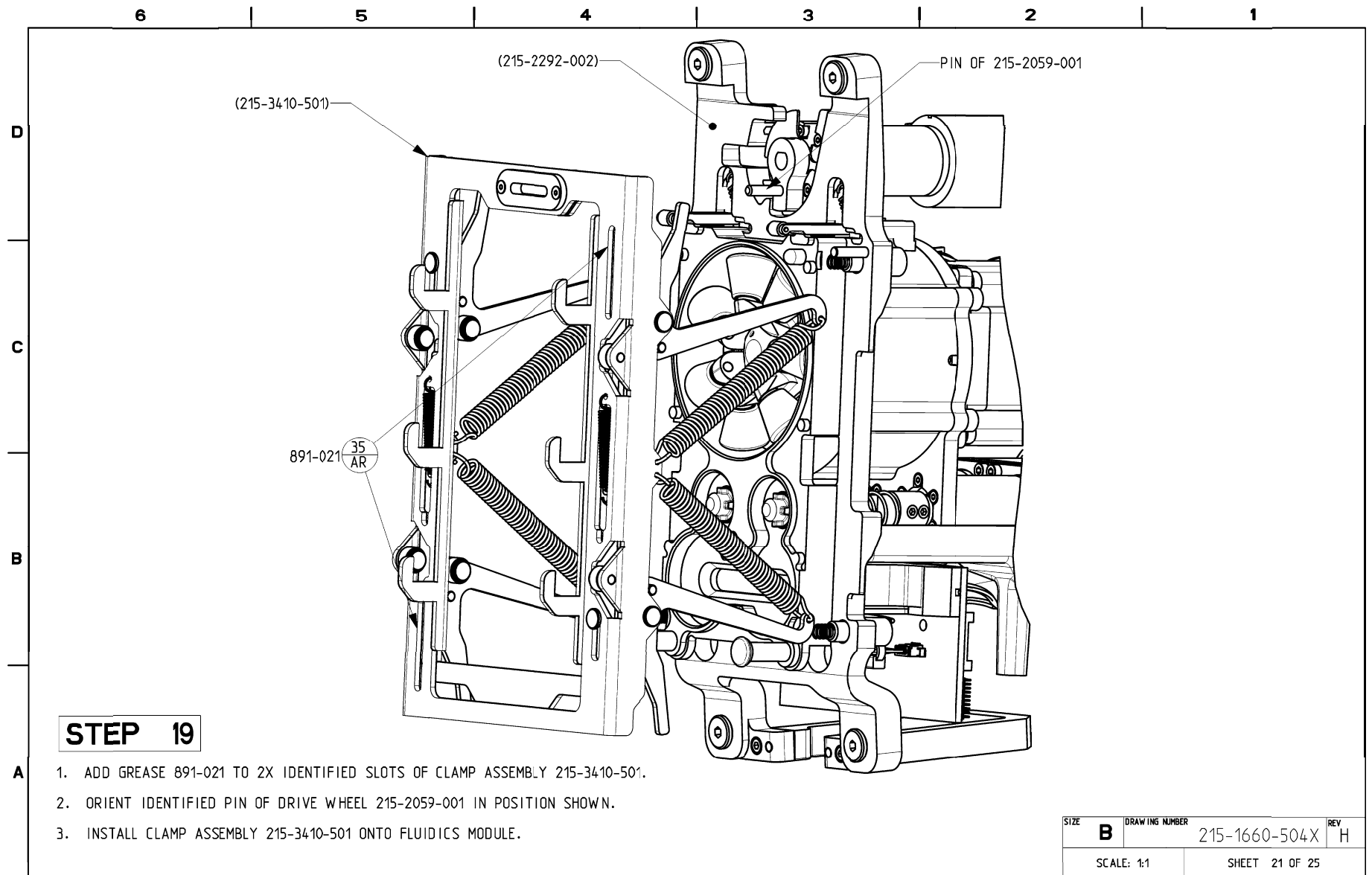


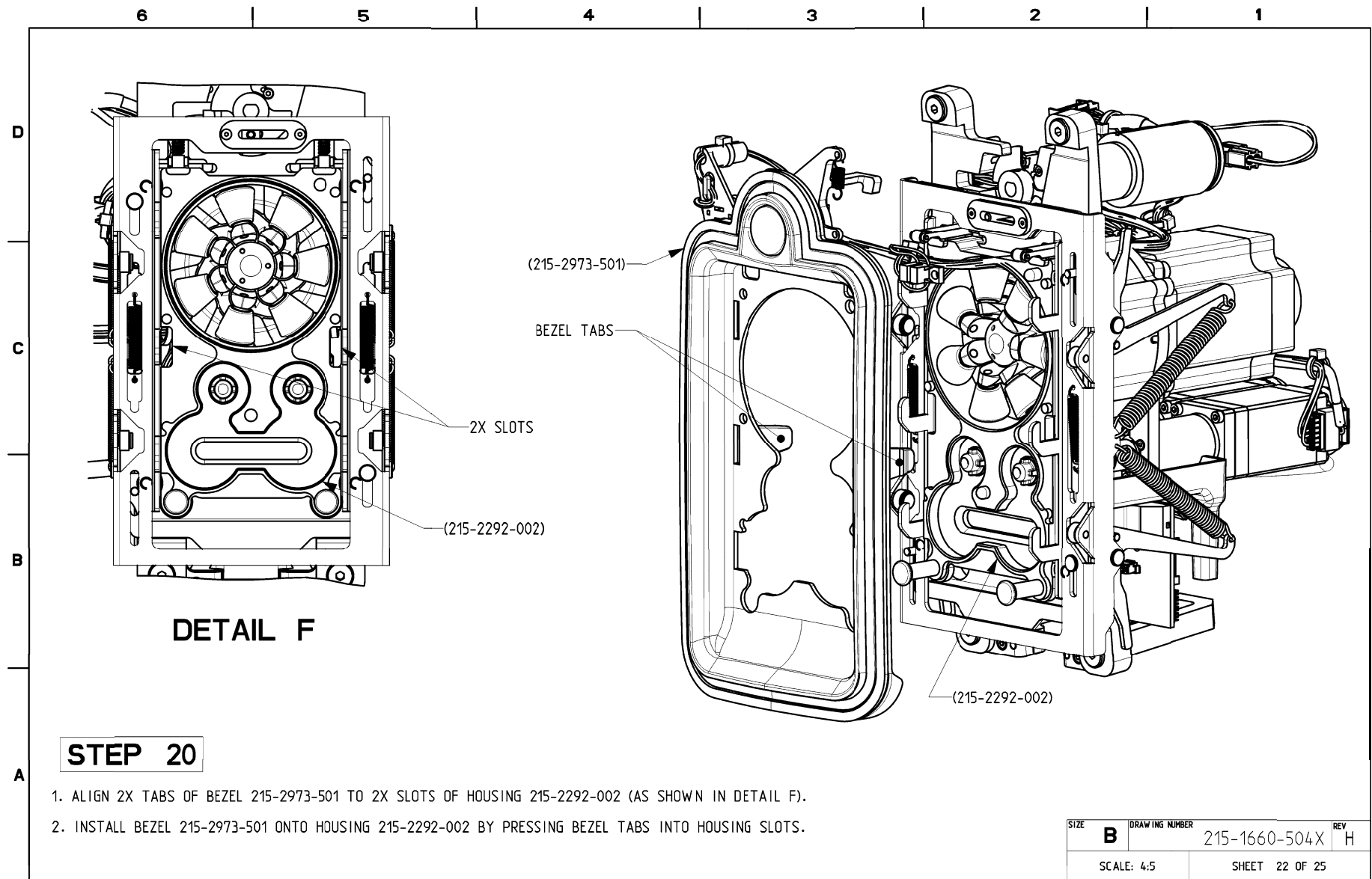


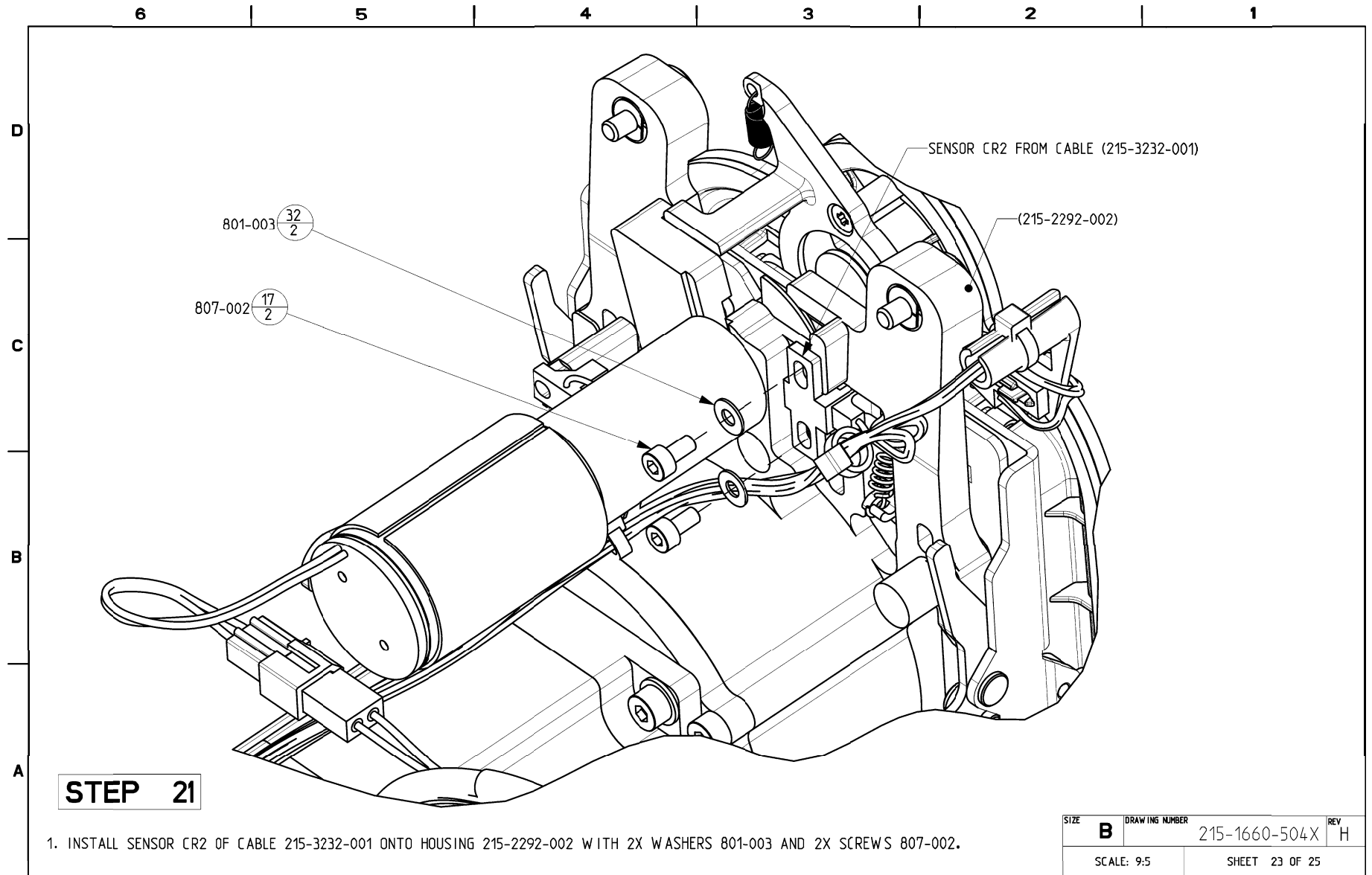


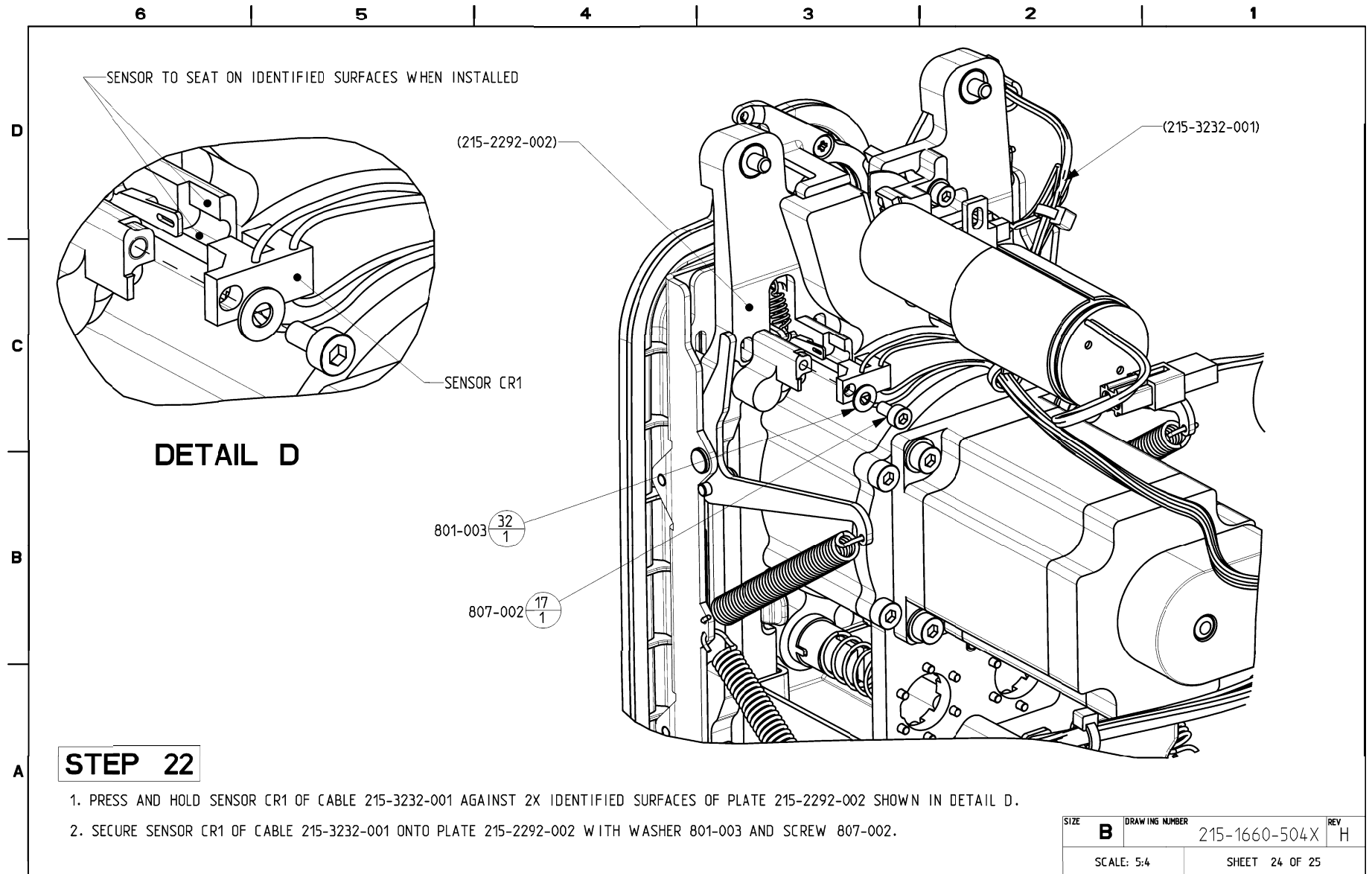


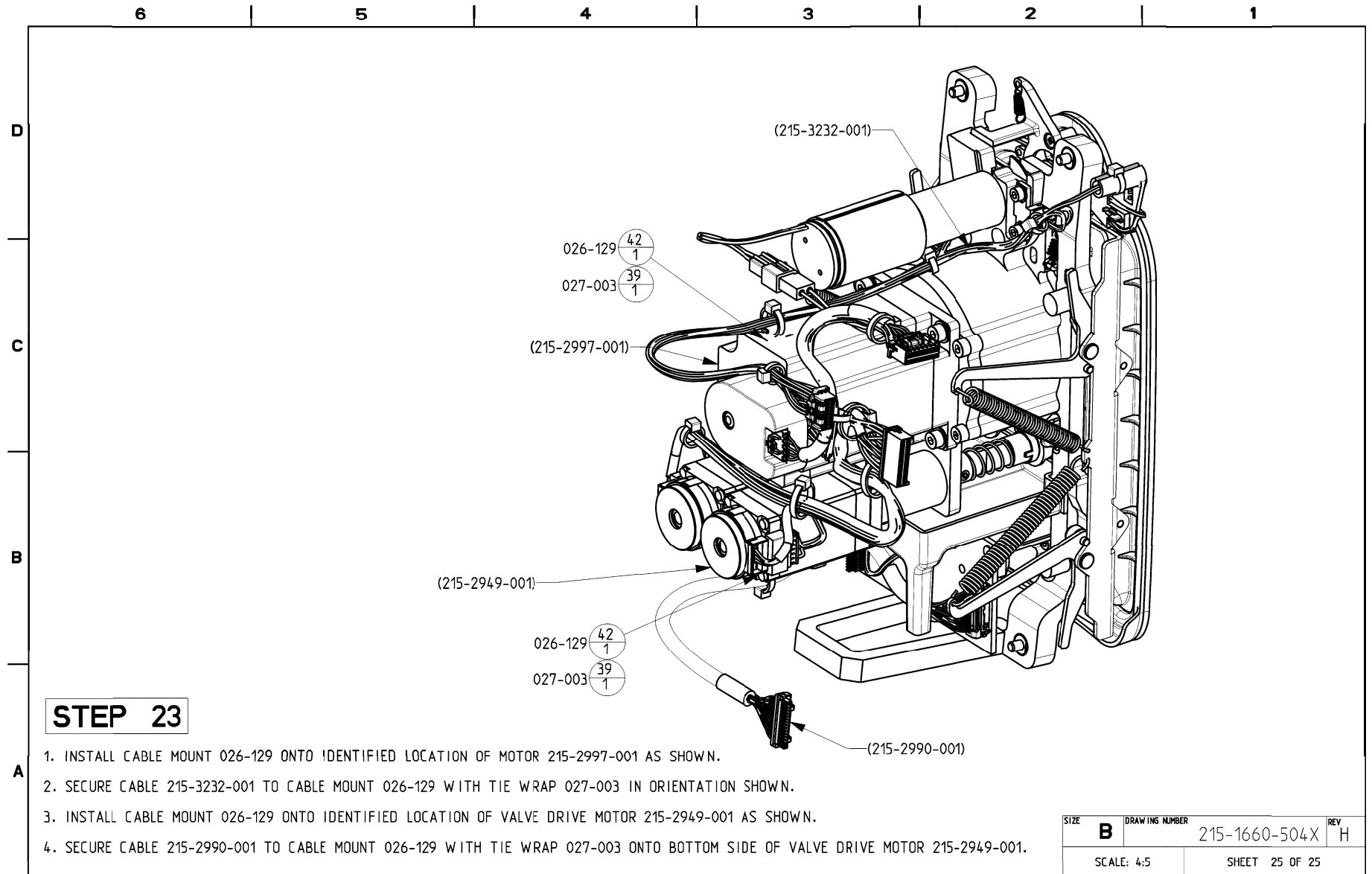






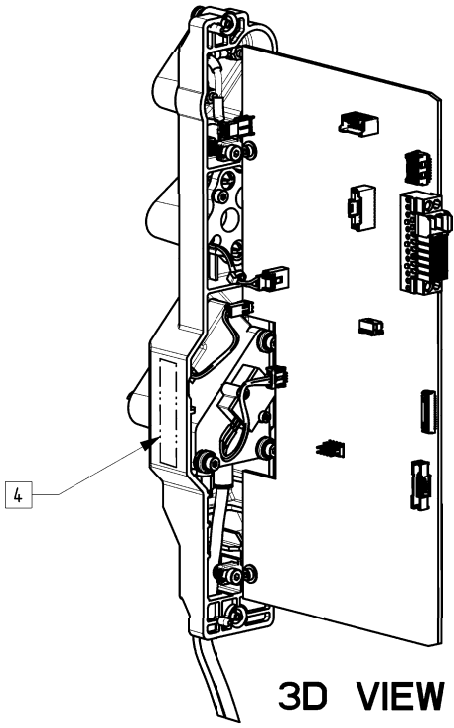














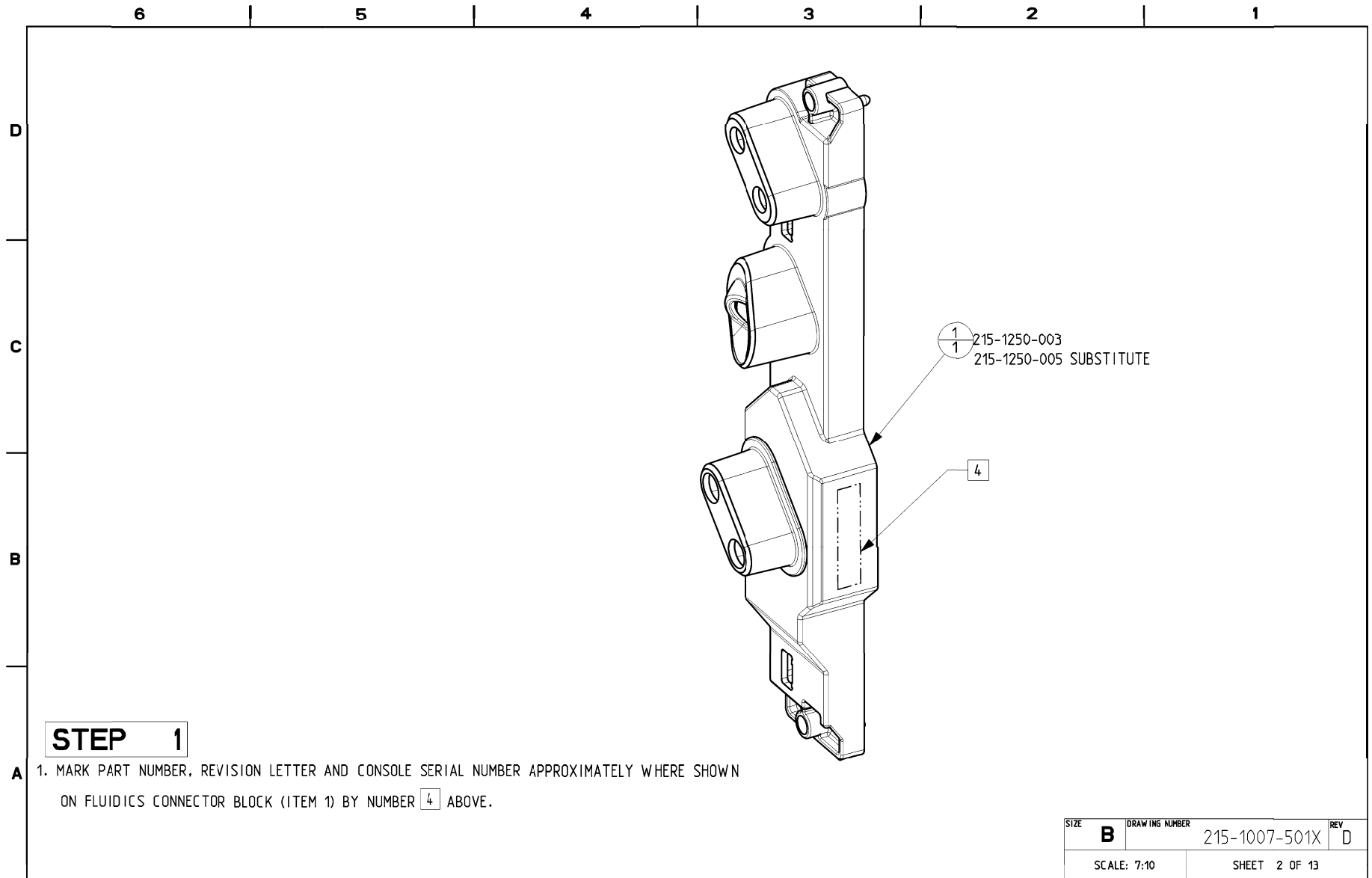


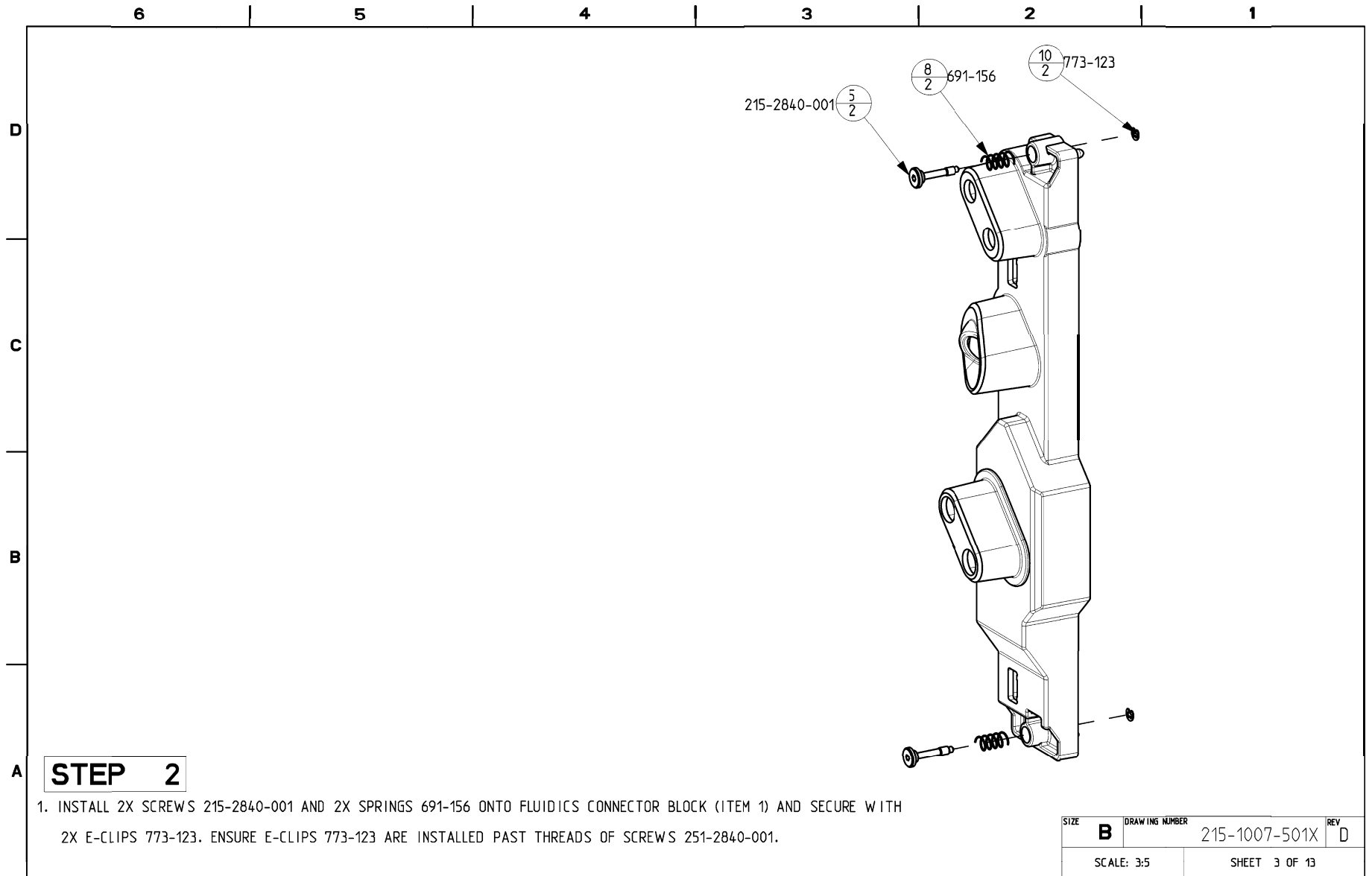
	6	5	4	3	2	1																																															
<p>NOTES: UNLESS OTHERWISE SPECIFIED</p> <p>1. INTERPRET THIS DRAWING PER ASME Y14.100-2004, ASME Y14.5-2009, AND ALCON SPECIFICATION 701-026.</p> <p>2.  SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.</p> <p>3. FOR STAND ALONE SUB-ASSEMBLY JOBS USE MAP 992-2150-004.</p> <p> PART NUMBER, REVISION LETTER AND CONSOLE SERIAL NUMBER MARKING.</p> <p> 215-1007-501S IS MADE FROM ONE 215-1007-501.</p> <p> -501S: TEST PER MTP 907-2150-022, FIELD SERVICE TEST MATRIX.</p> <div style="text-align: center; margin-top: 100px;">  <p>3D VIEW</p> </div>	REVISION HISTORY																																																				
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">REV</th> <th style="width: 40%;">ECN</th> <th style="width: 50%;">DATE</th> </tr> </thead> <tbody> <tr> <td>P18</td> <td>NOT RELEASED</td> <td>07/03/13</td> </tr> <tr> <td>A</td> <td>CN045858ECN</td> <td>07/23/13</td> </tr> <tr> <td>B</td> <td>CN049179ECN</td> <td>10/17/13</td> </tr> <tr> <td>C</td> <td>CN062071ECN</td> <td>07/01/15</td> </tr> <tr> <td>D</td> <td>CN072026ECN</td> <td>04/21/17</td> </tr> </tbody> </table>						REV	ECN	DATE	P18	NOT RELEASED	07/03/13	A	CN045858ECN	07/23/13	B	CN049179ECN	10/17/13	C	CN062071ECN	07/01/15	D	CN072026ECN	04/21/17																													
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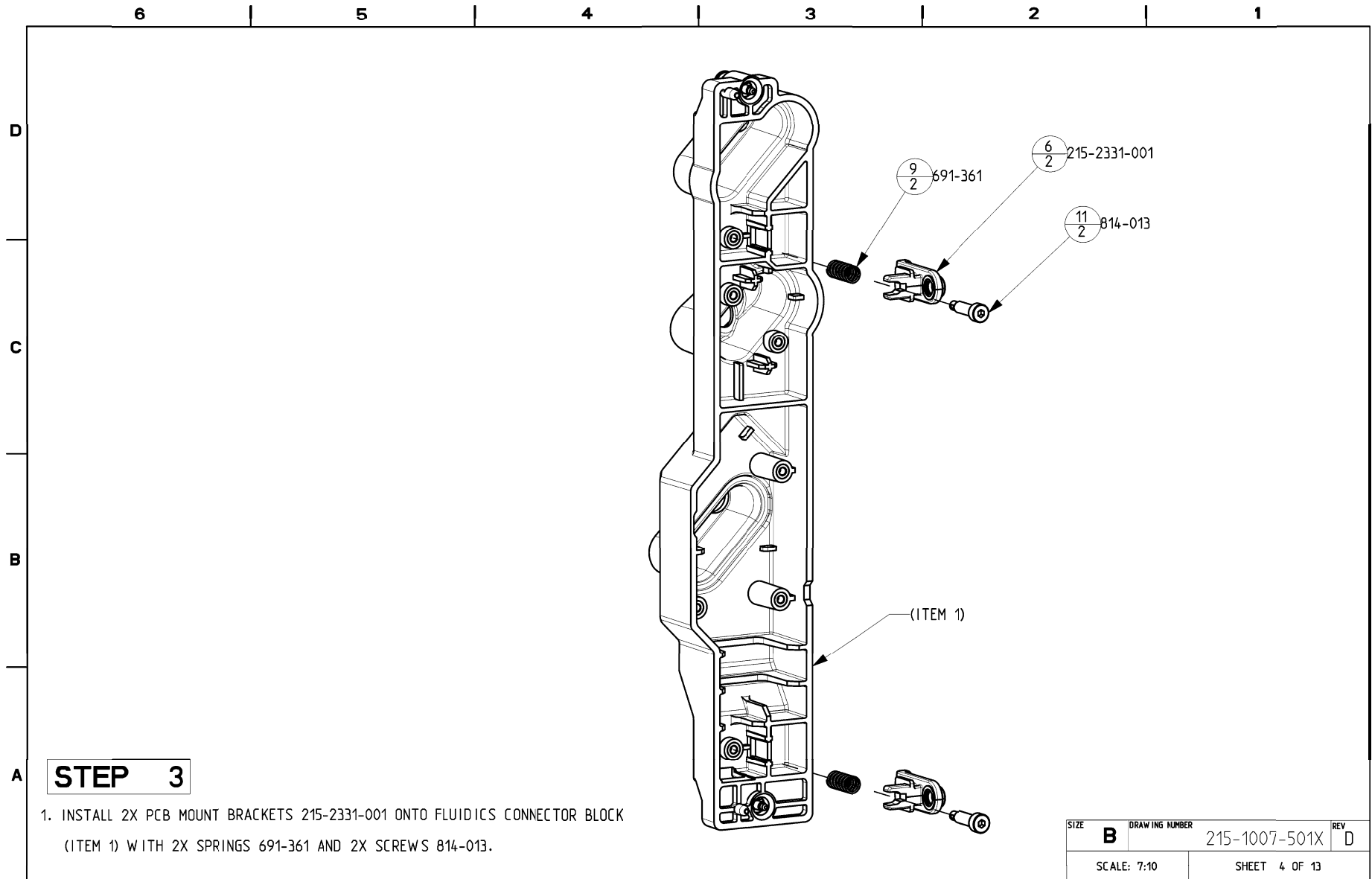
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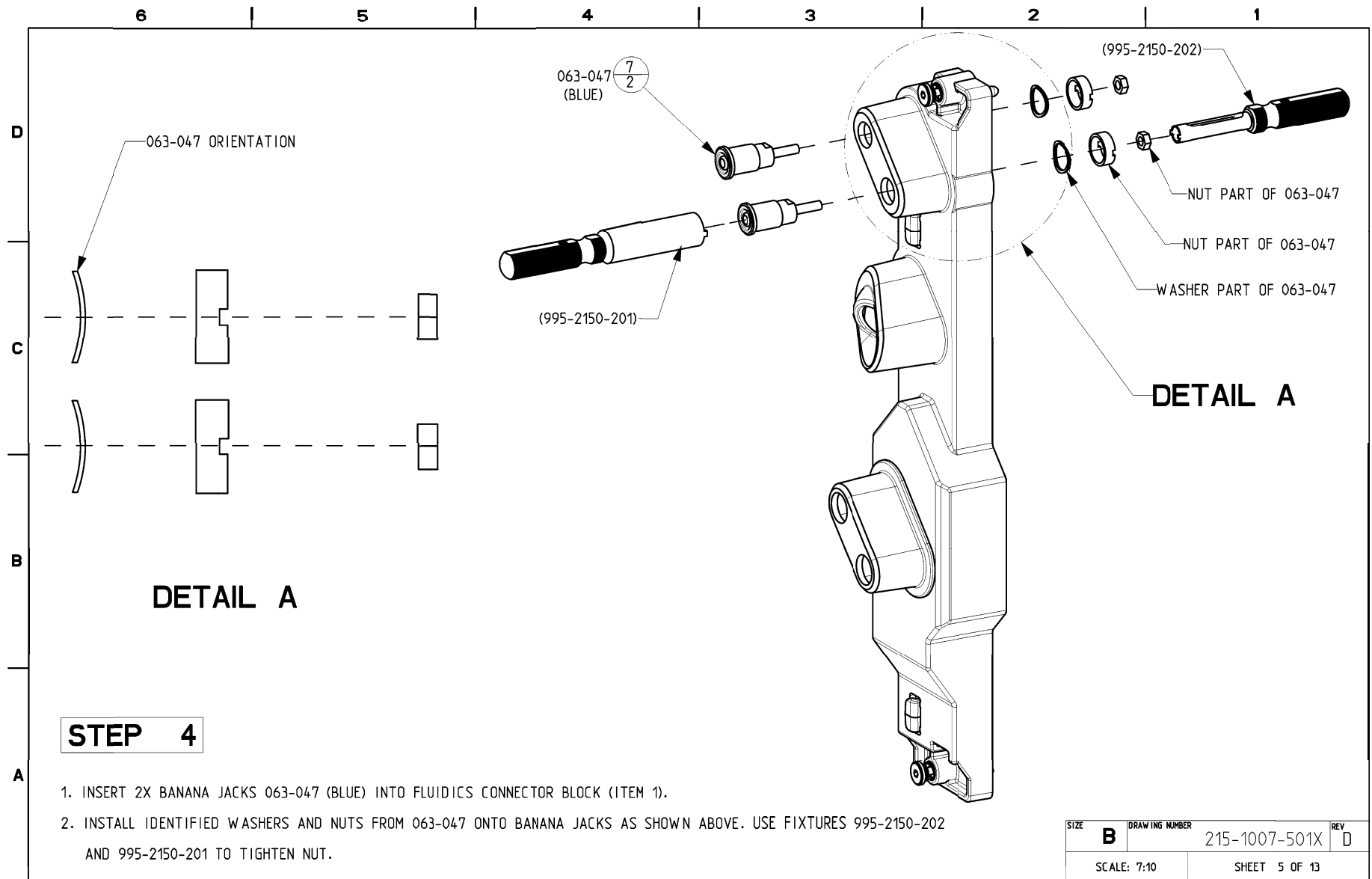
215-1007-501X

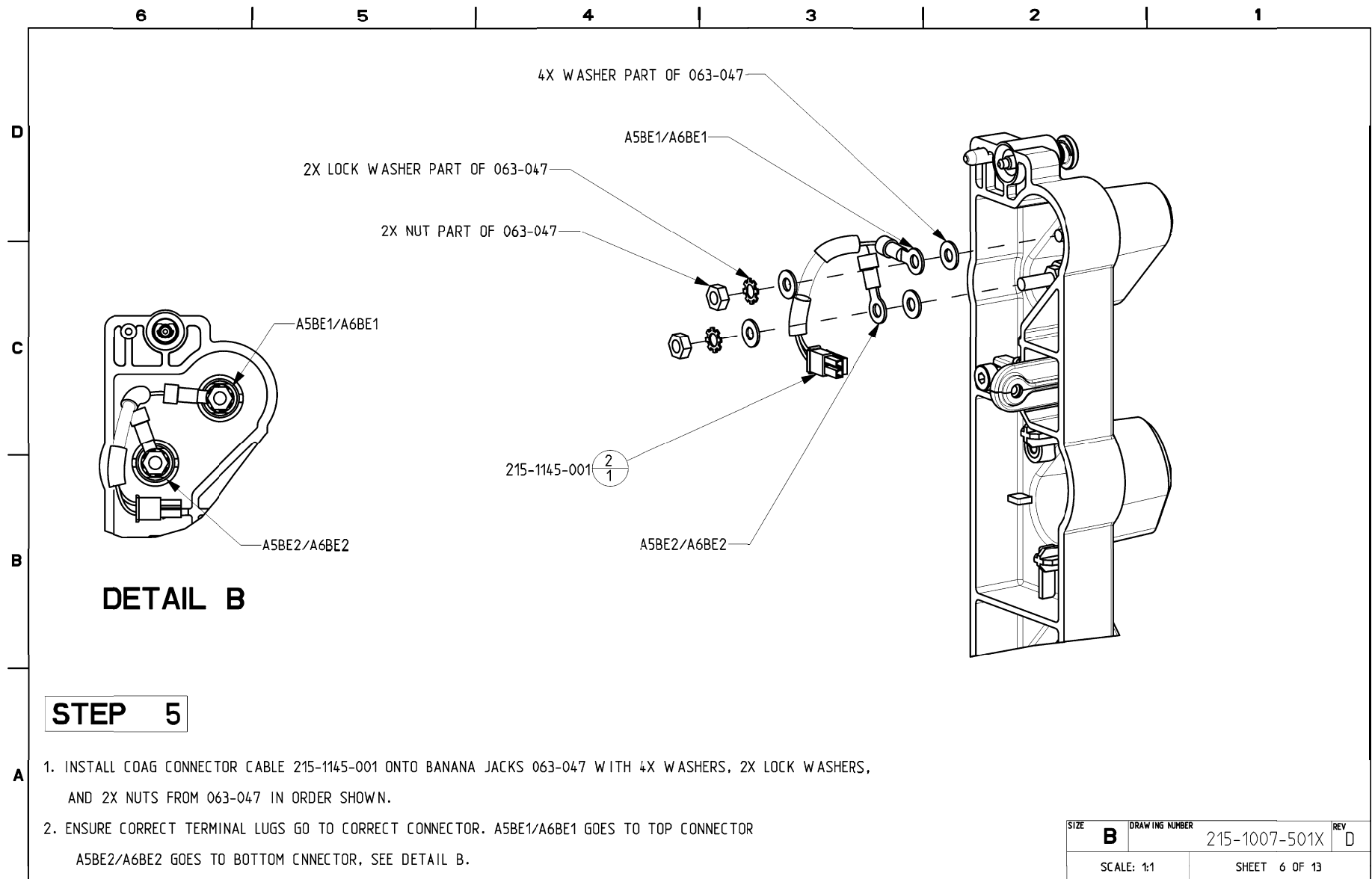
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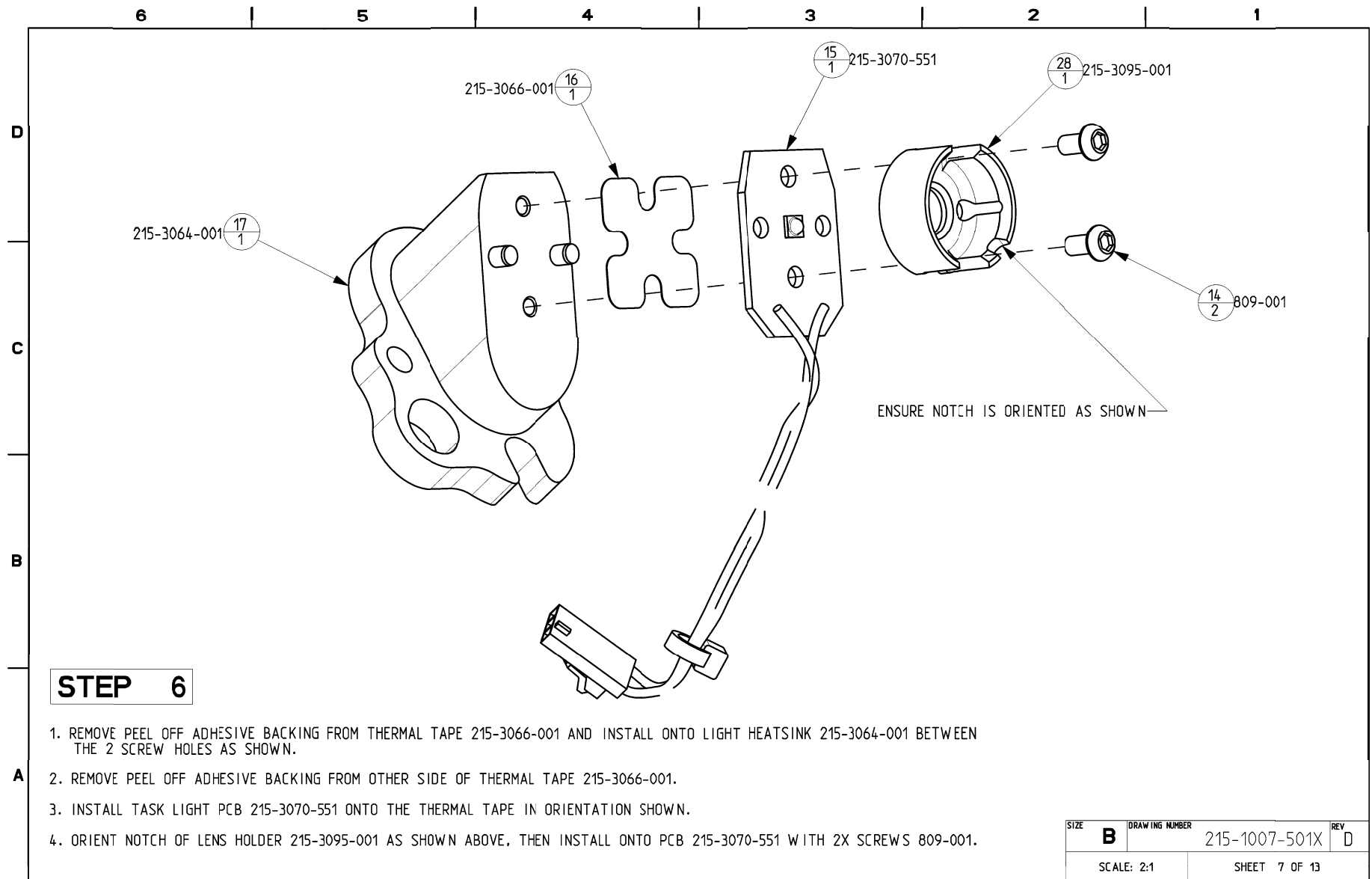


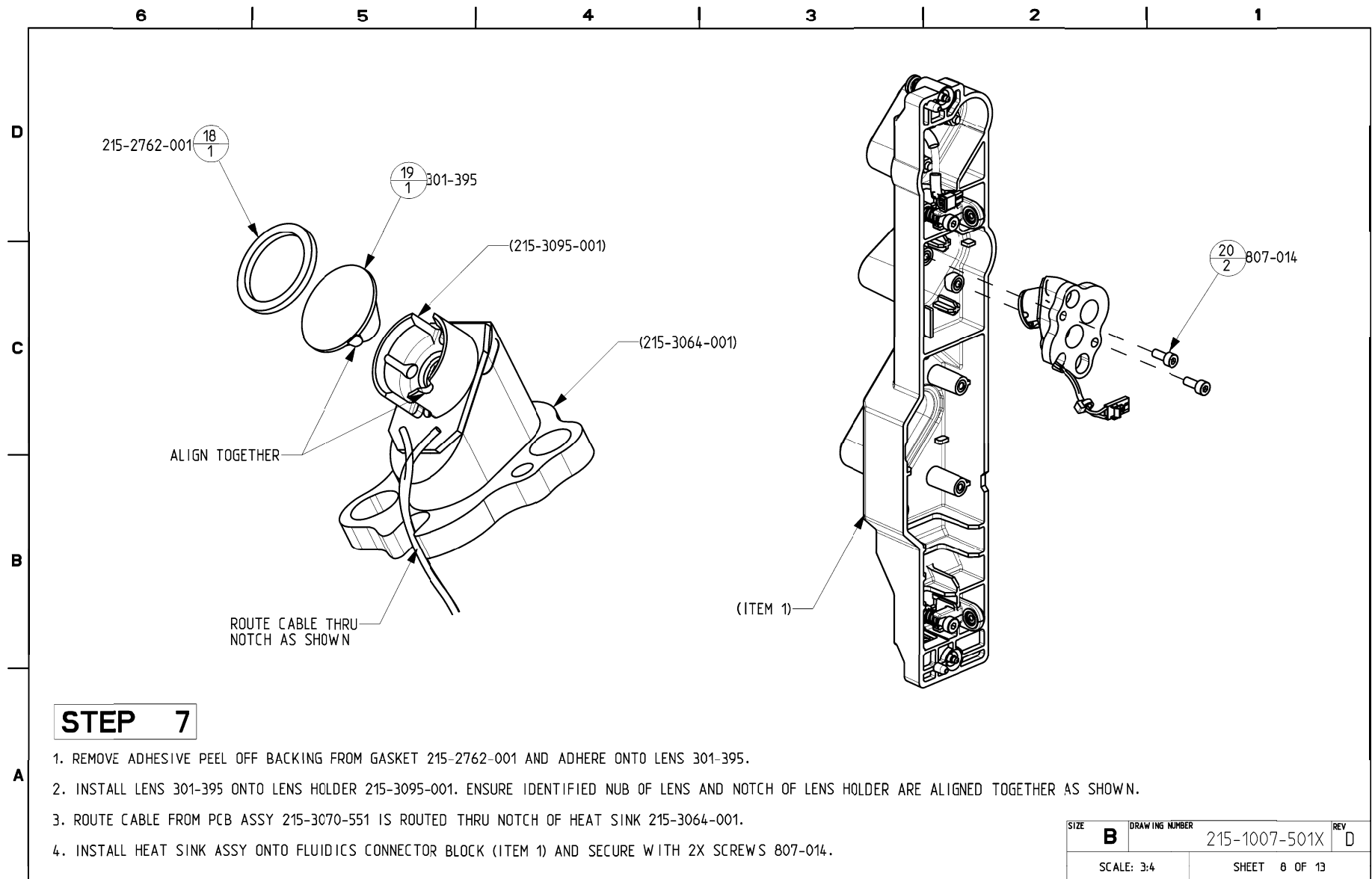


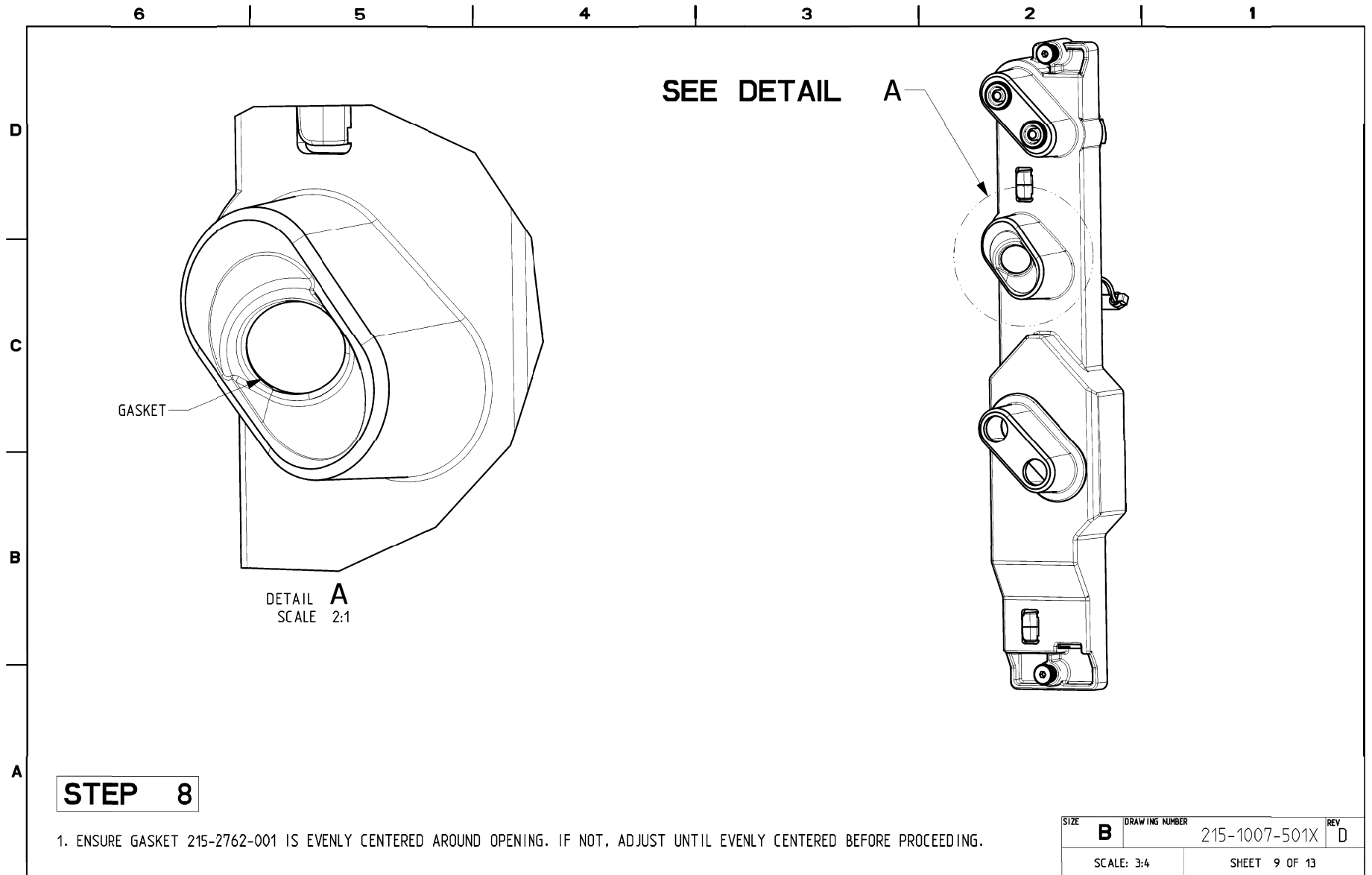


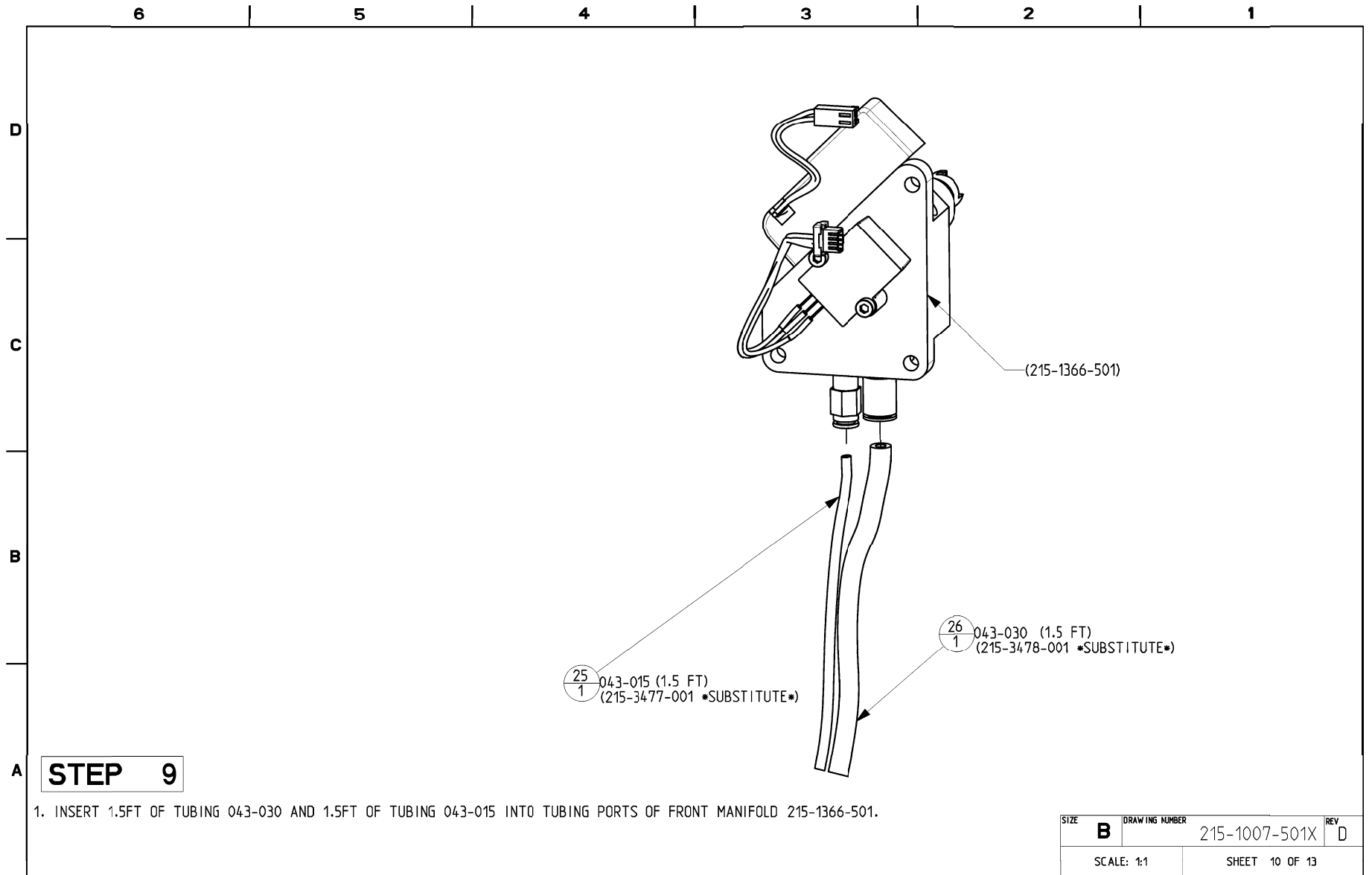


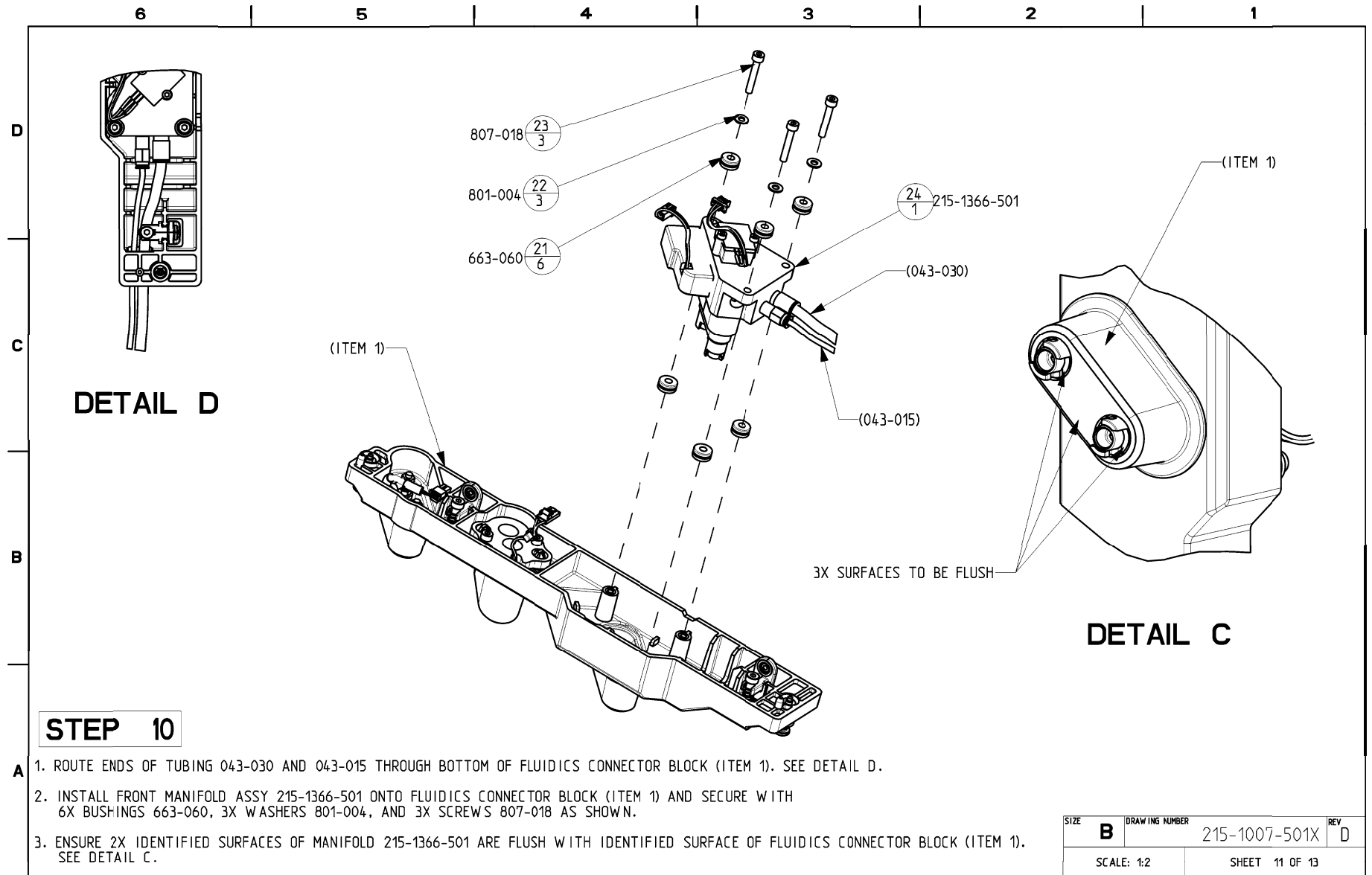


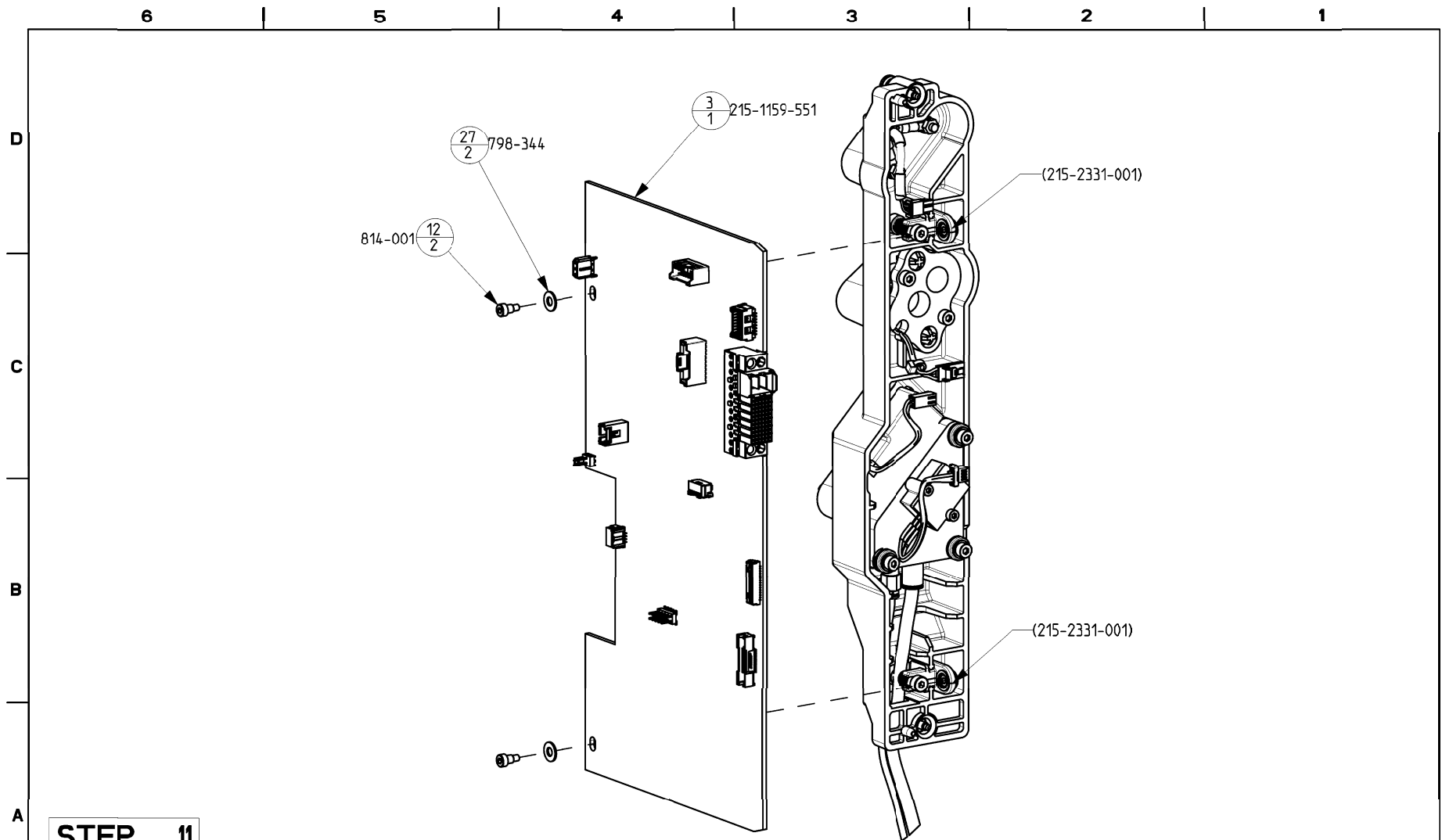








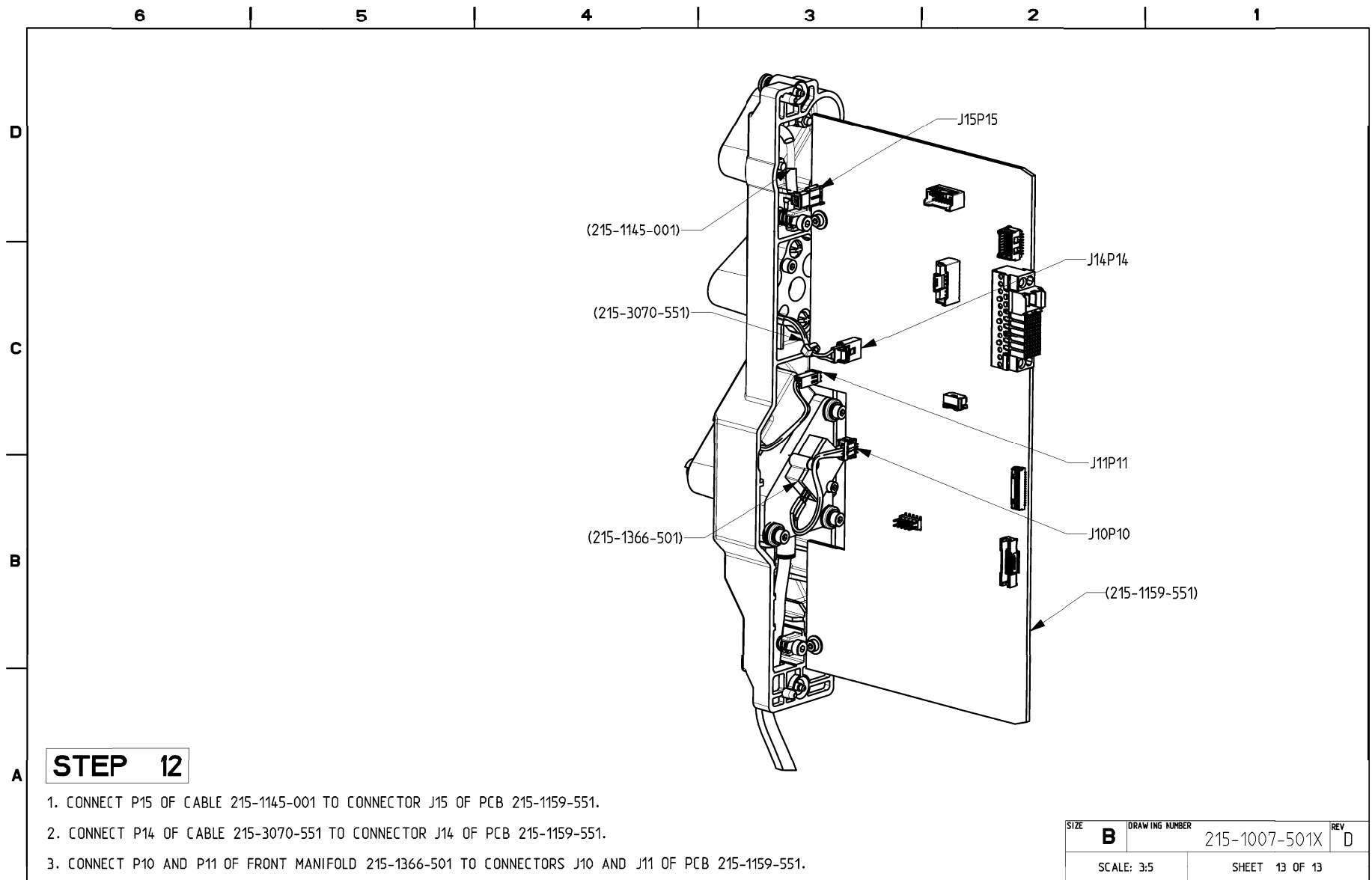




STEP 11

1. RECORD PCB SERIAL NUMBER AND REVISION LETTER ONTO DHR DATA SHEET, AND CAPTURE IN JDE.
2. INSTALL PCB 215-1159-551 ONTO BRACKETS 215-2331-001 WITH 2X SCREWS 814-001 AND 2X WASHERS 798-344.

SIZE	B	DRAWING NUMBER	215-1007-501X	REV	D
SCALE: 3:5		SHEET 12 OF 13			



6

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NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

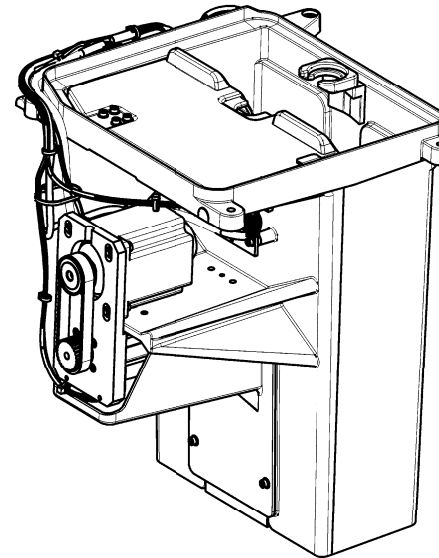
2. FOR STAND ALONE SUB-ASSEMBLY JOBS USE MAP 992-2150-004.

3 PART NUMBER, SERIAL NUMBER, AND REVISION LETTER MARKING.

4. $\frac{X}{Y}$ BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.

5 215-2736-501S IS MADE FROM ONE 215-2736-501.

6 -501S: TEST PER MTP 907-2150-022, FIELD SERVICE TEST MATRIX.



3D VIEW

REVISION HISTORY

REV	ECN	DATE
P5	NOT RELEASED	07/05/13
A	CN045938ECN	07/18/13
B	CN047471ECN	08/29/13
C	CN048270ECN	09/23/13
D	CN049090ECN	10/18/13
E	CN050174ECN	11/13/13
F	CN051978ECN	01/31/14
G	CN067066ECN	04/07/16

TABULATION BLOCK

PART NUMBER	REV	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
215-2736-501	G	ASSY,IRRIGATION,ACTIVE	215-2736-501S	G	ASSY,IRRIGATION,ACTIVE SERVICE

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	J.ATHERLEY	DATE	07/03/13	<div>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.</div> <div>Alcon Irvine, California 92618</div>
CHECKED	M.PANDI	DATE	07/03/13	
APPROVED	D.W ILSON	DATE	07/03/13	
FORMAT REVISION			2/23/2007	
PDMLINK MODEL ATTRIBUTES		NAME: 215-2736-501_PROC		VERSION: G.2

DESCRIPTION

ASSY,IRRIGATION,ACTIVE

SIZE
B

DRAWING NUMBER

215-2736-501X

REV
G

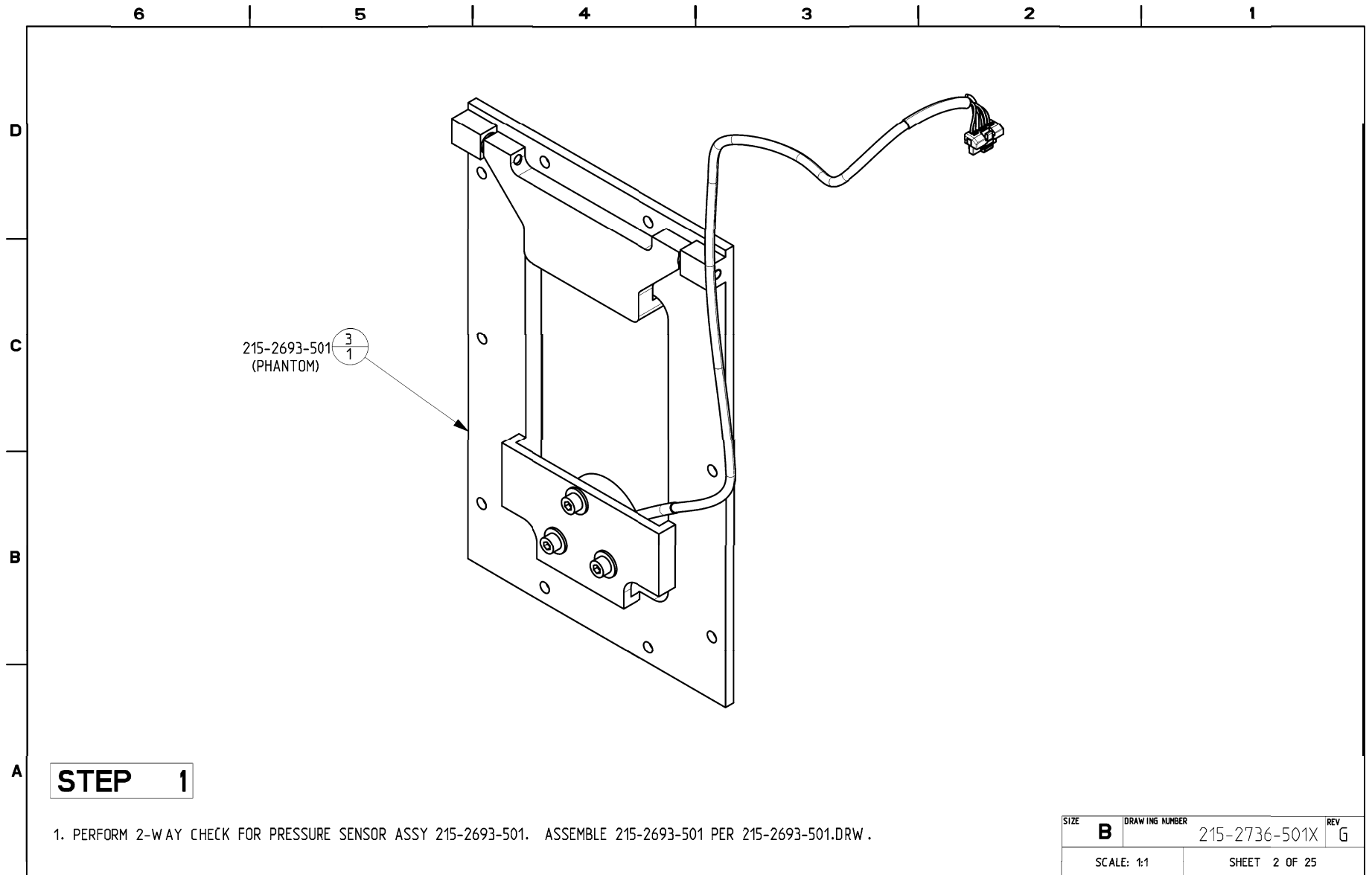
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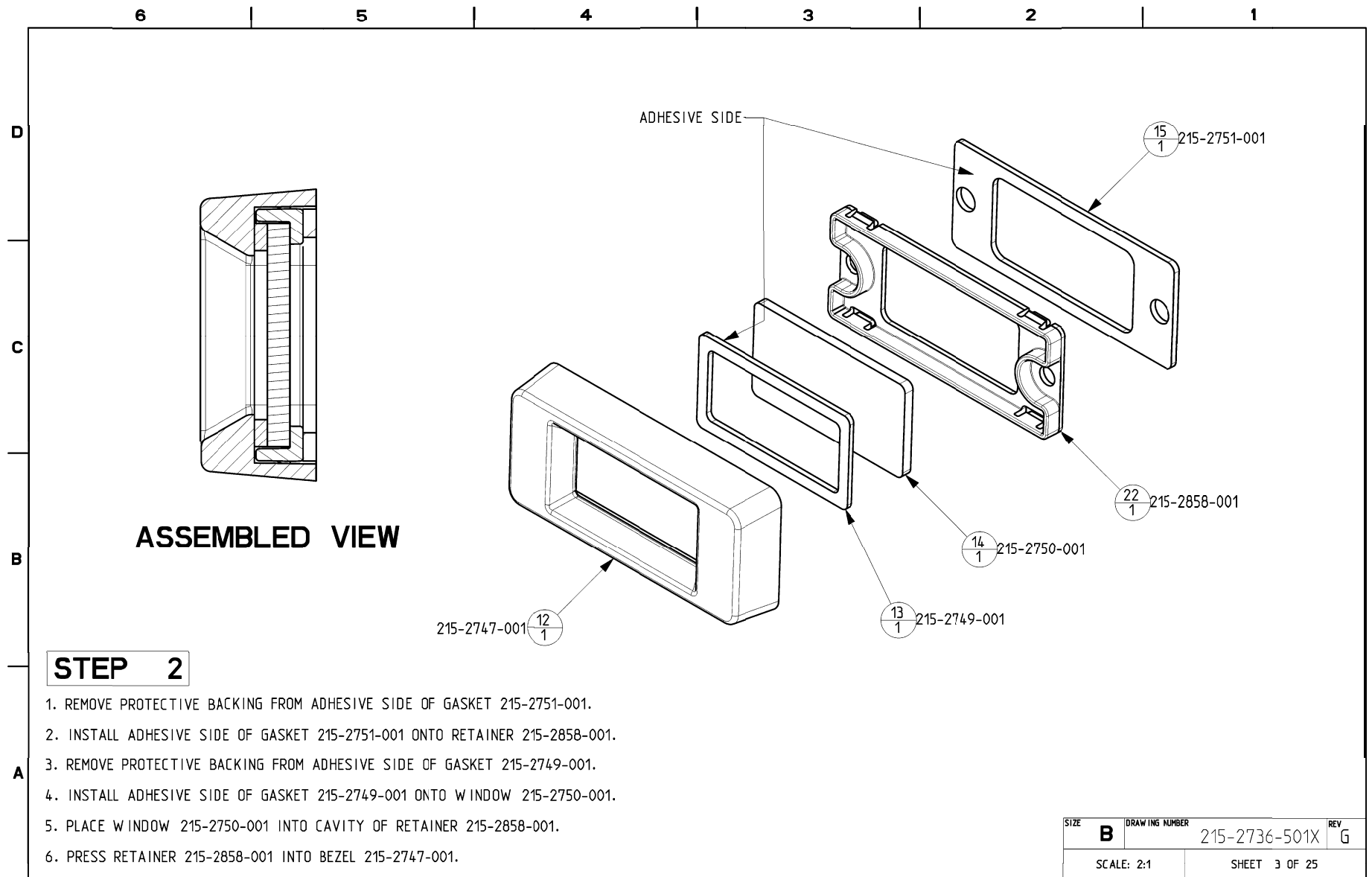
SHEET 1 OF 25

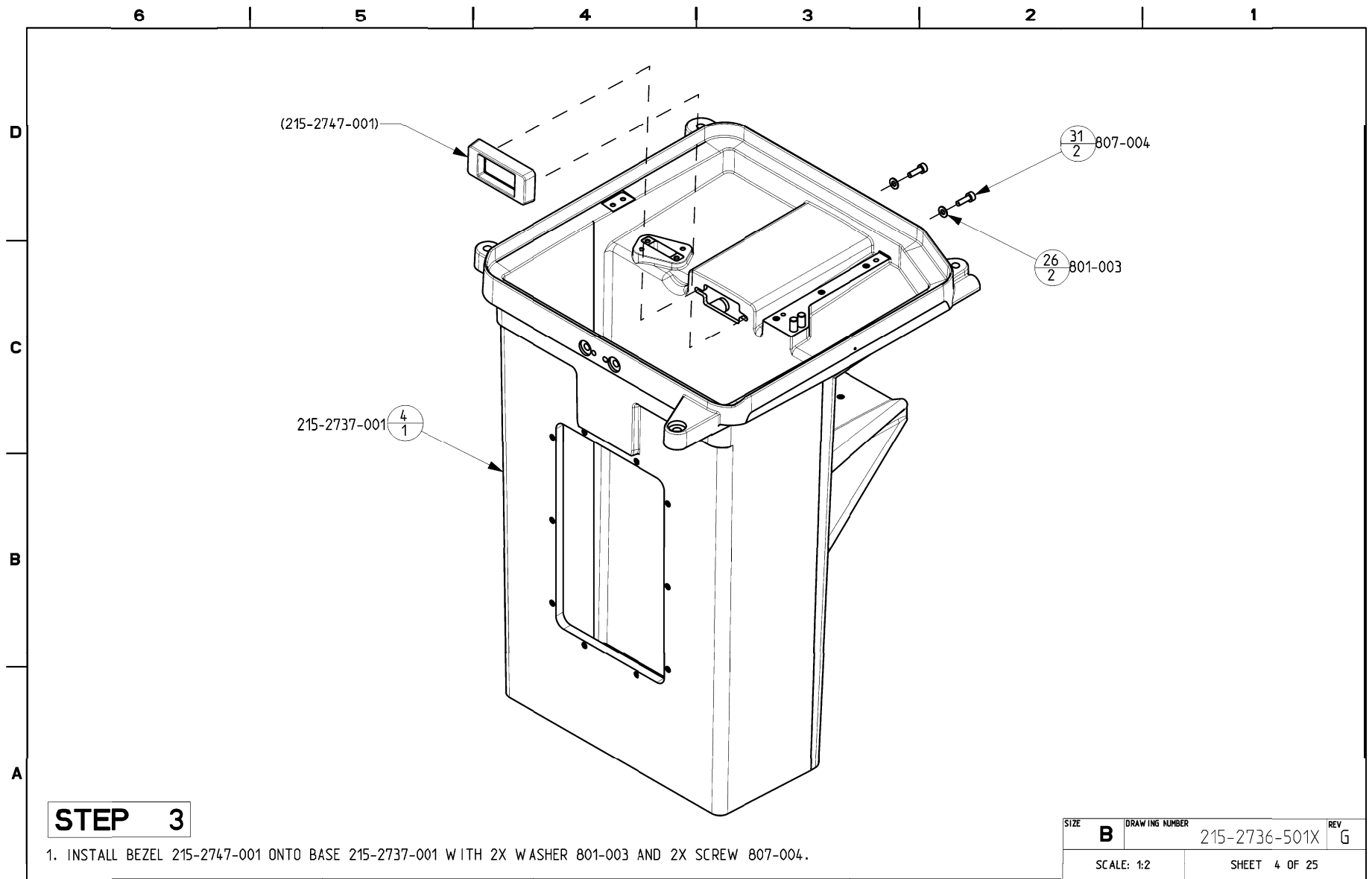
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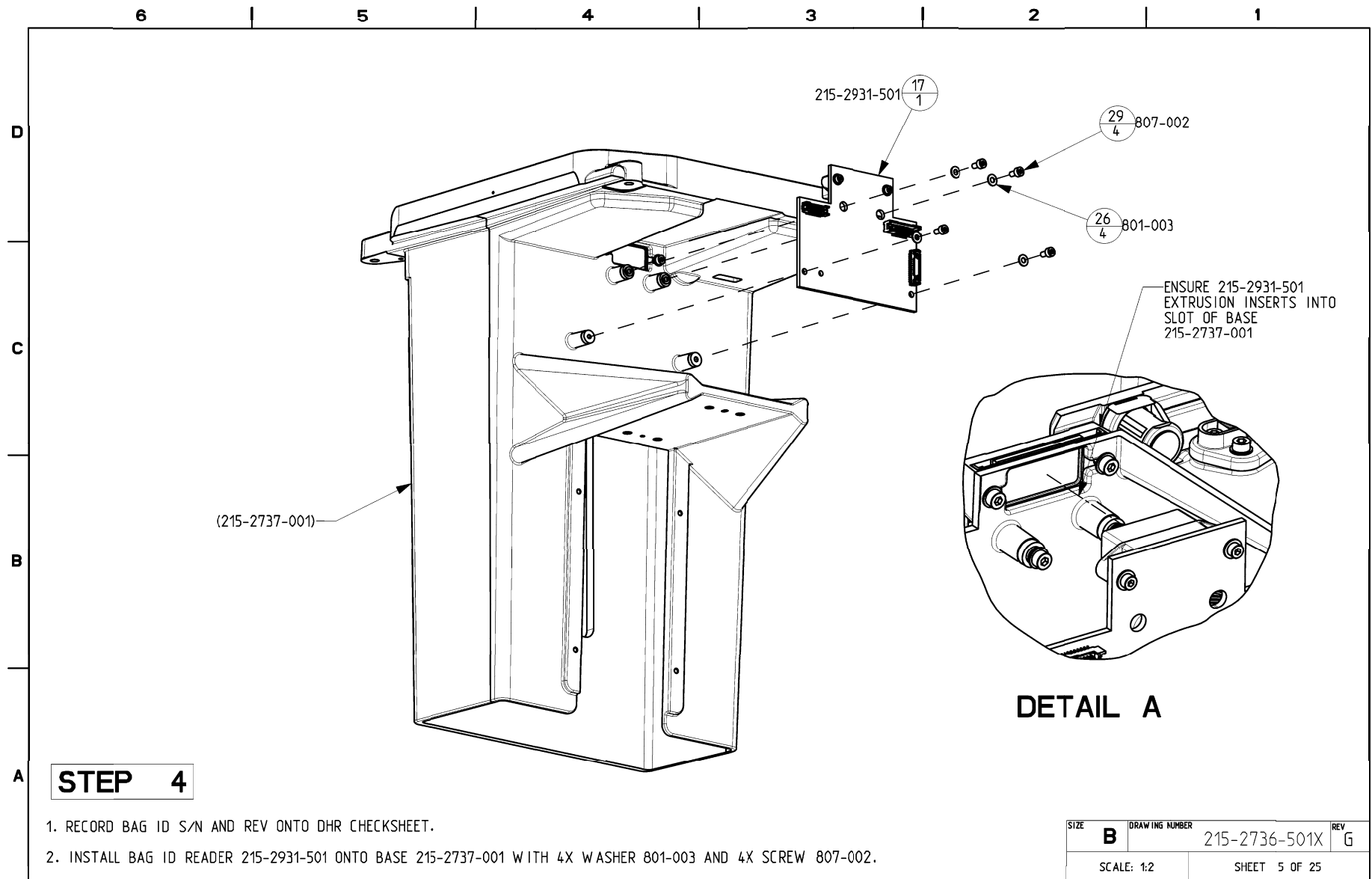
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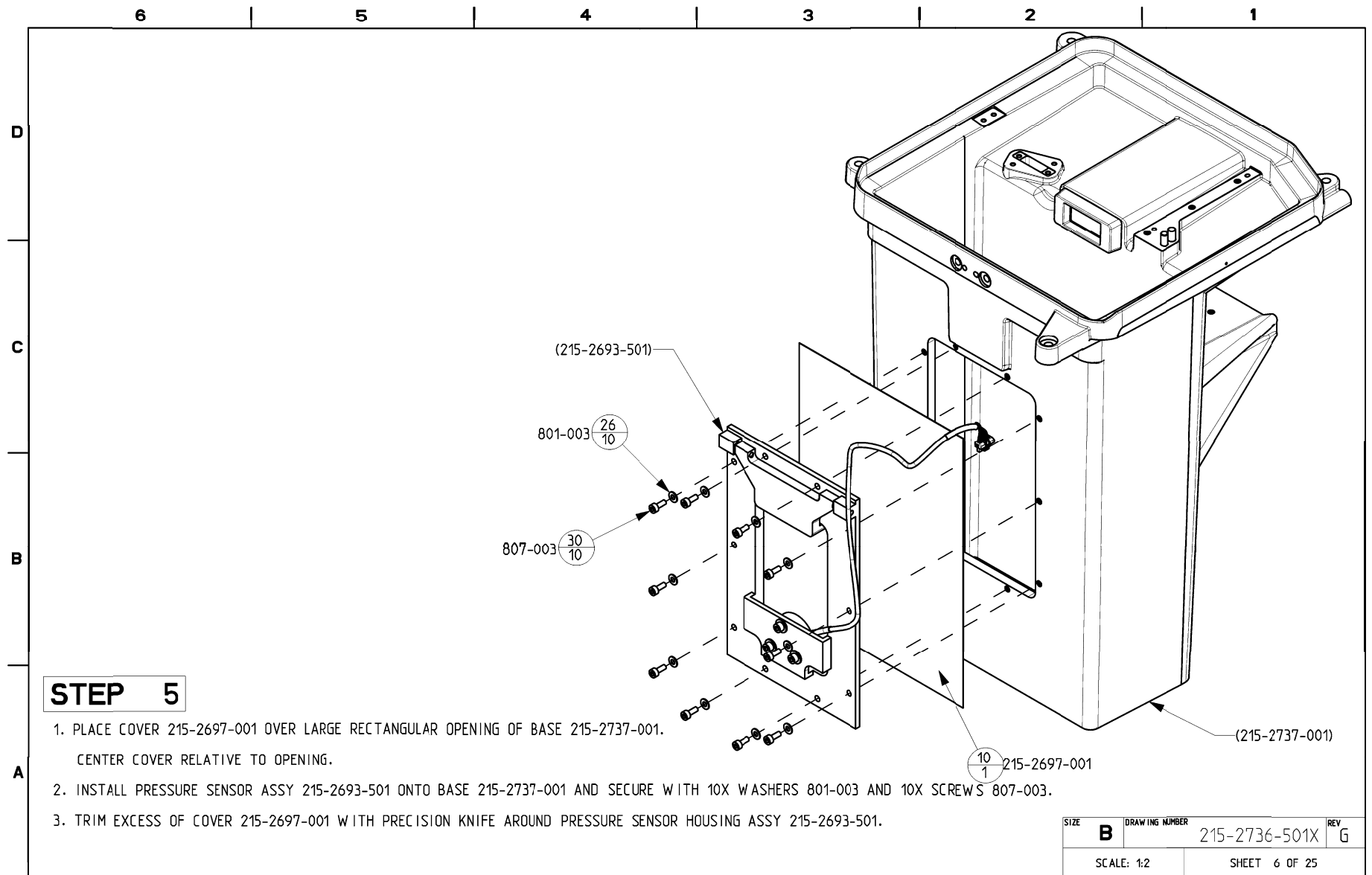
REV
G

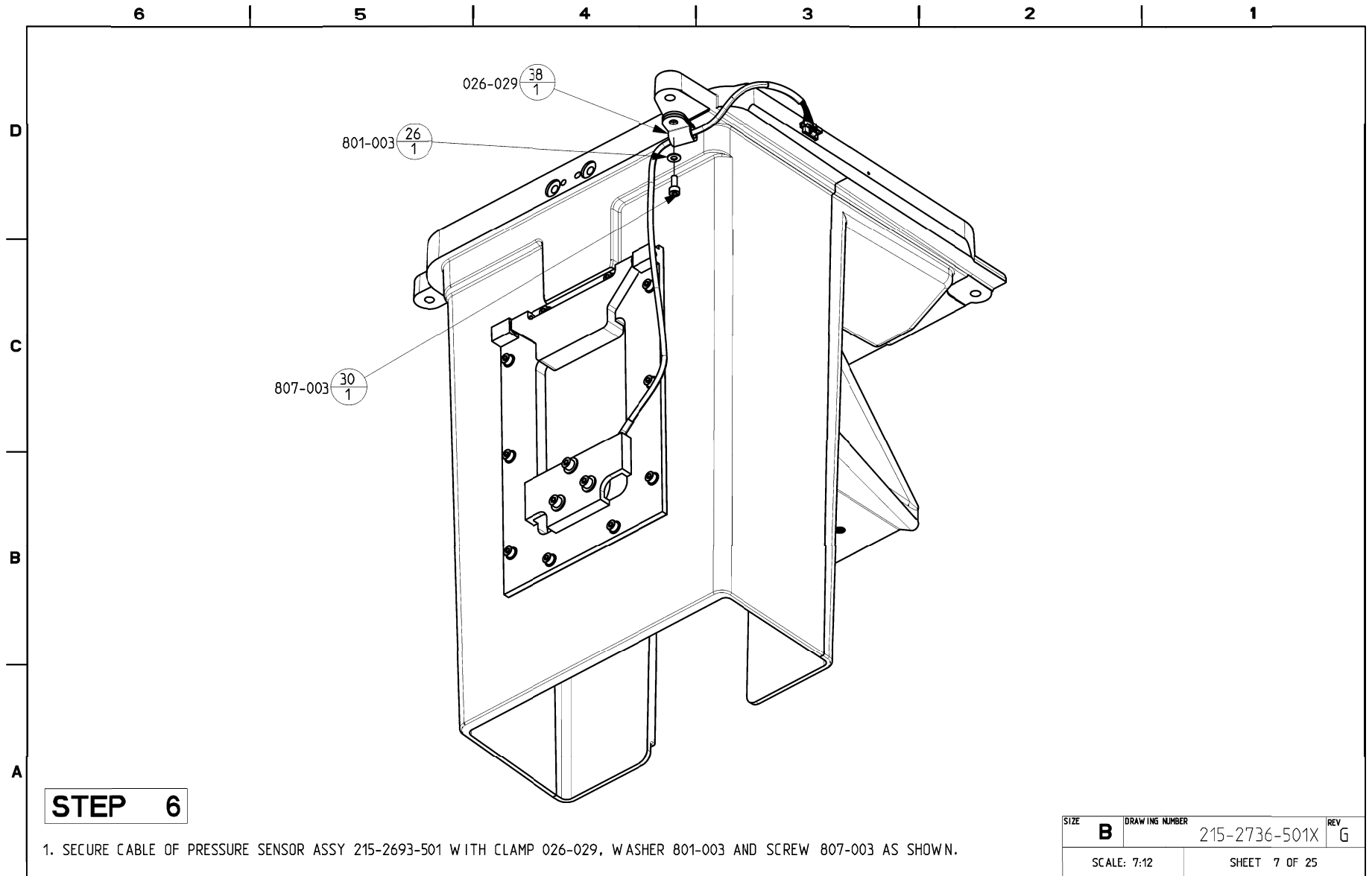


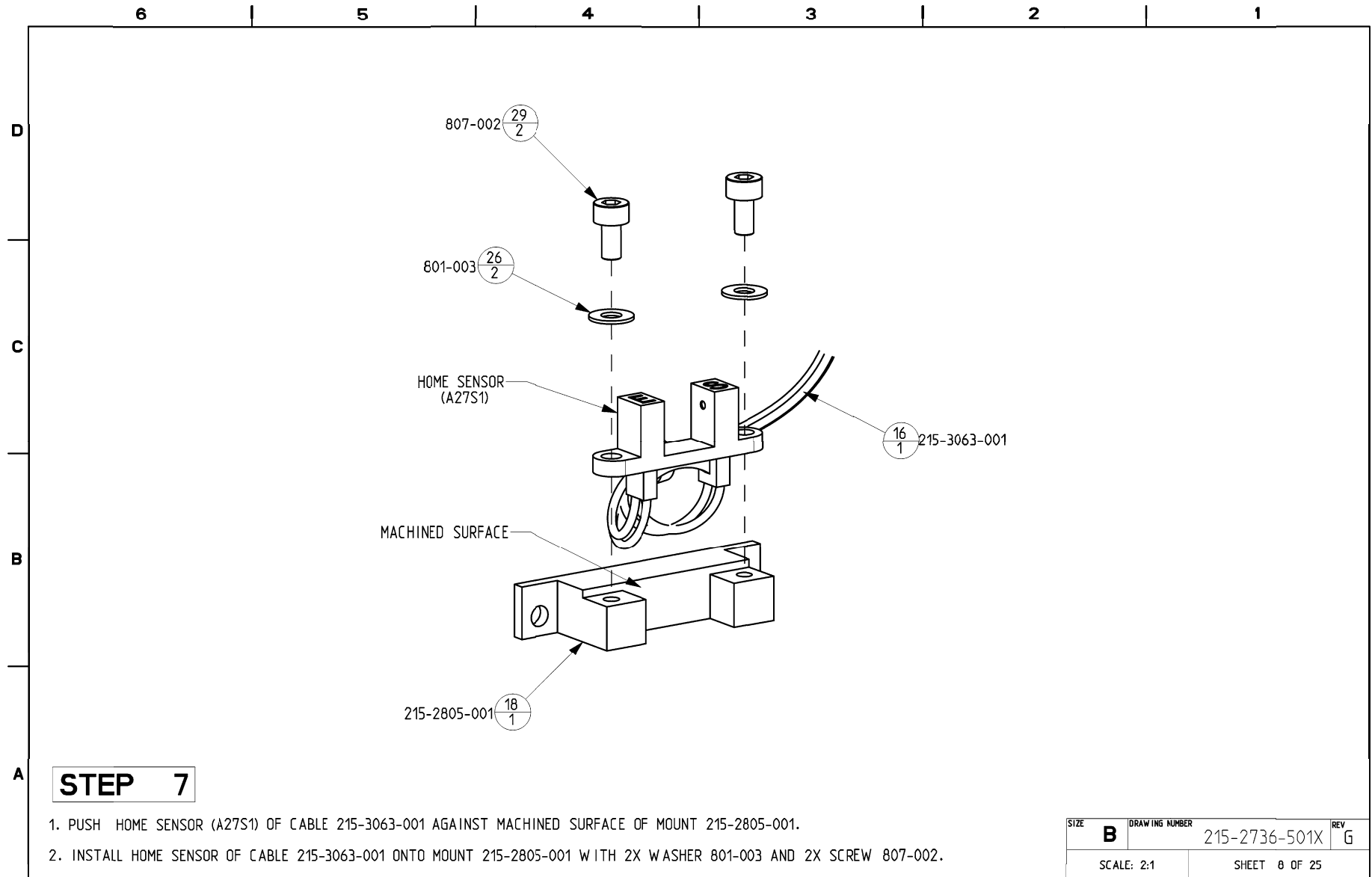


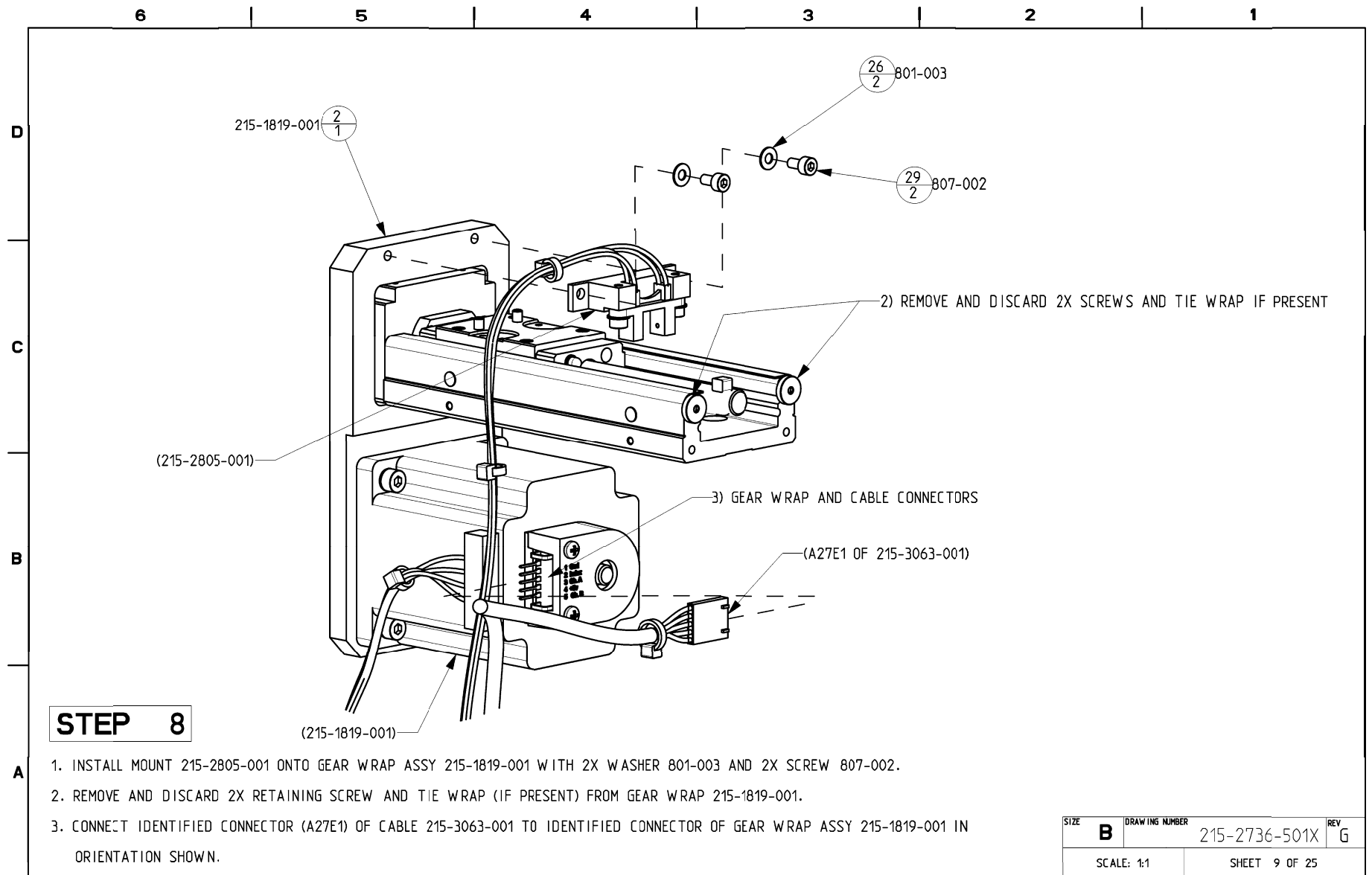




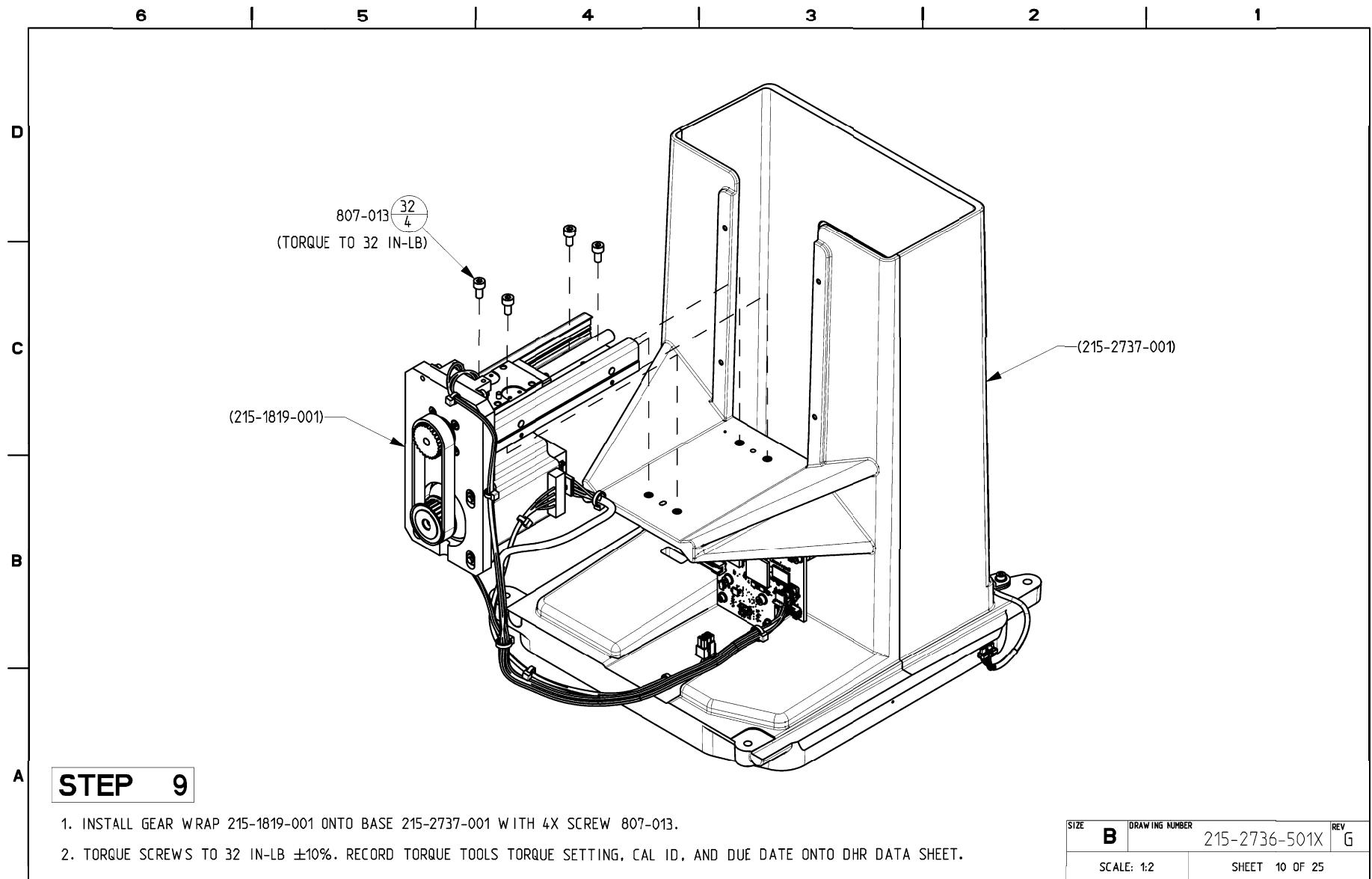


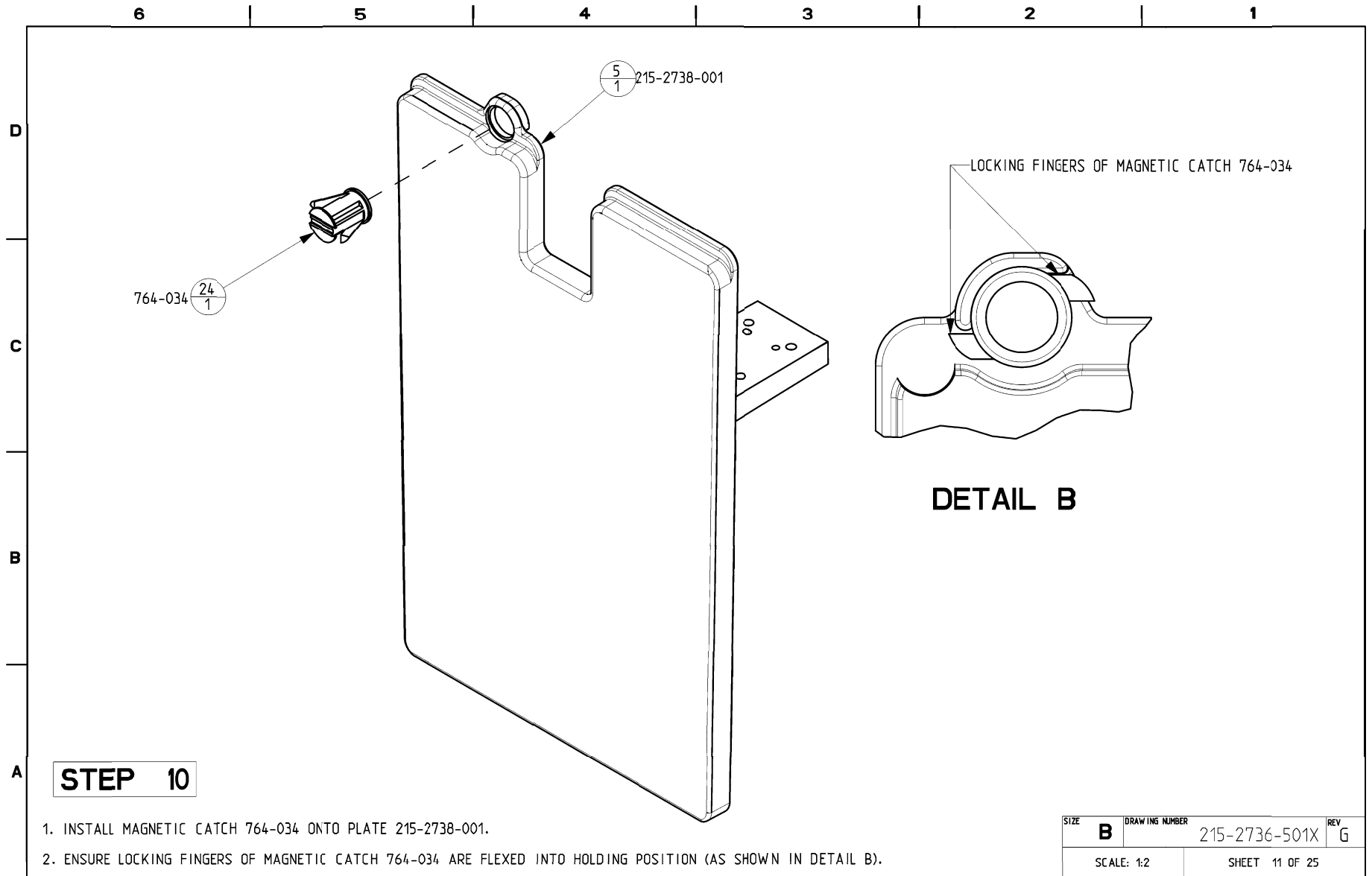




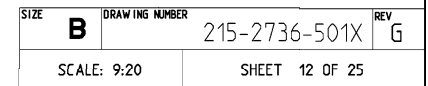


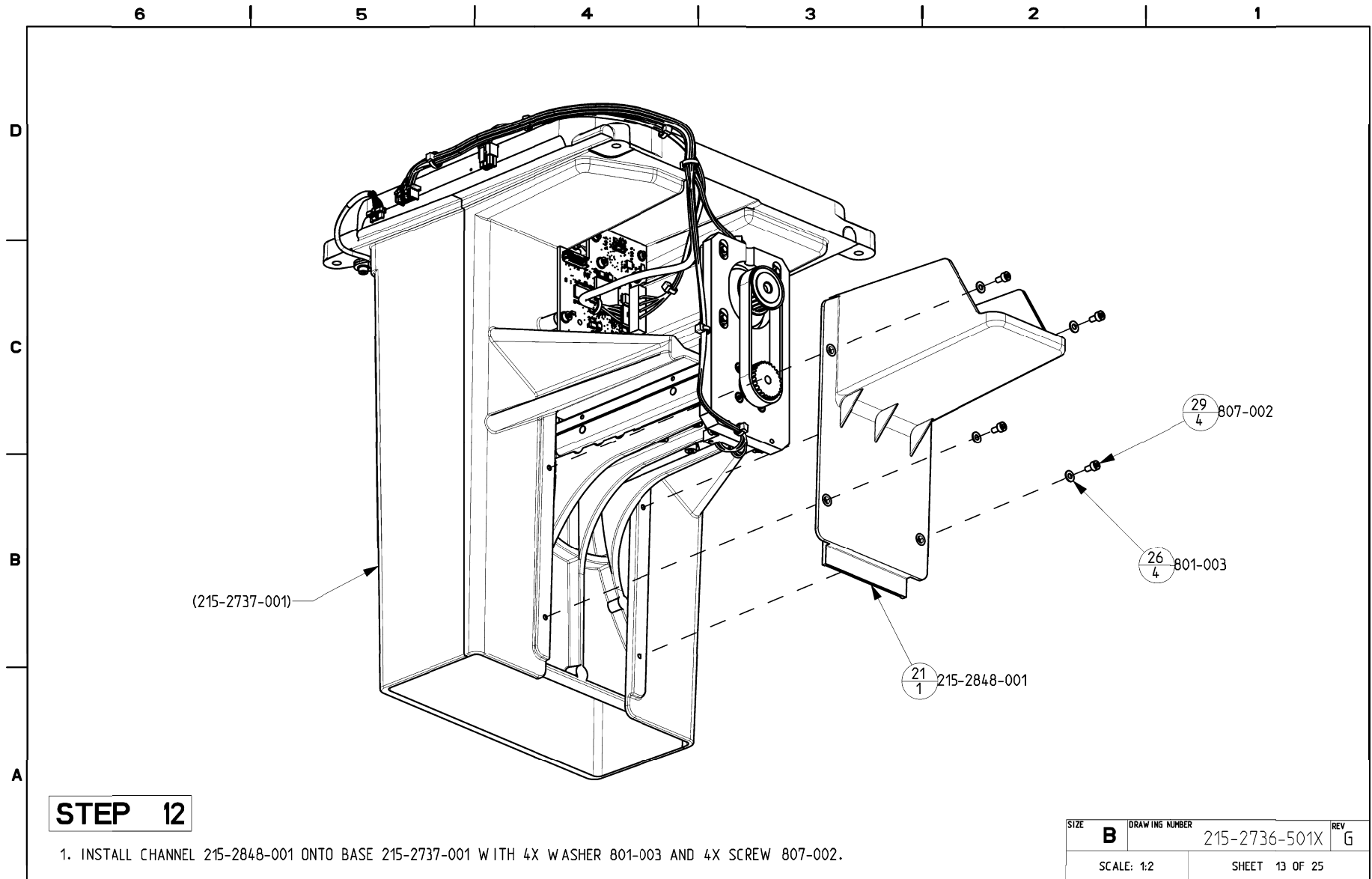
SIZE	DRAWING NUMBER	REV
B	215-2736-501X	G
SCALE: 1:1		SHEET 9 OF 25

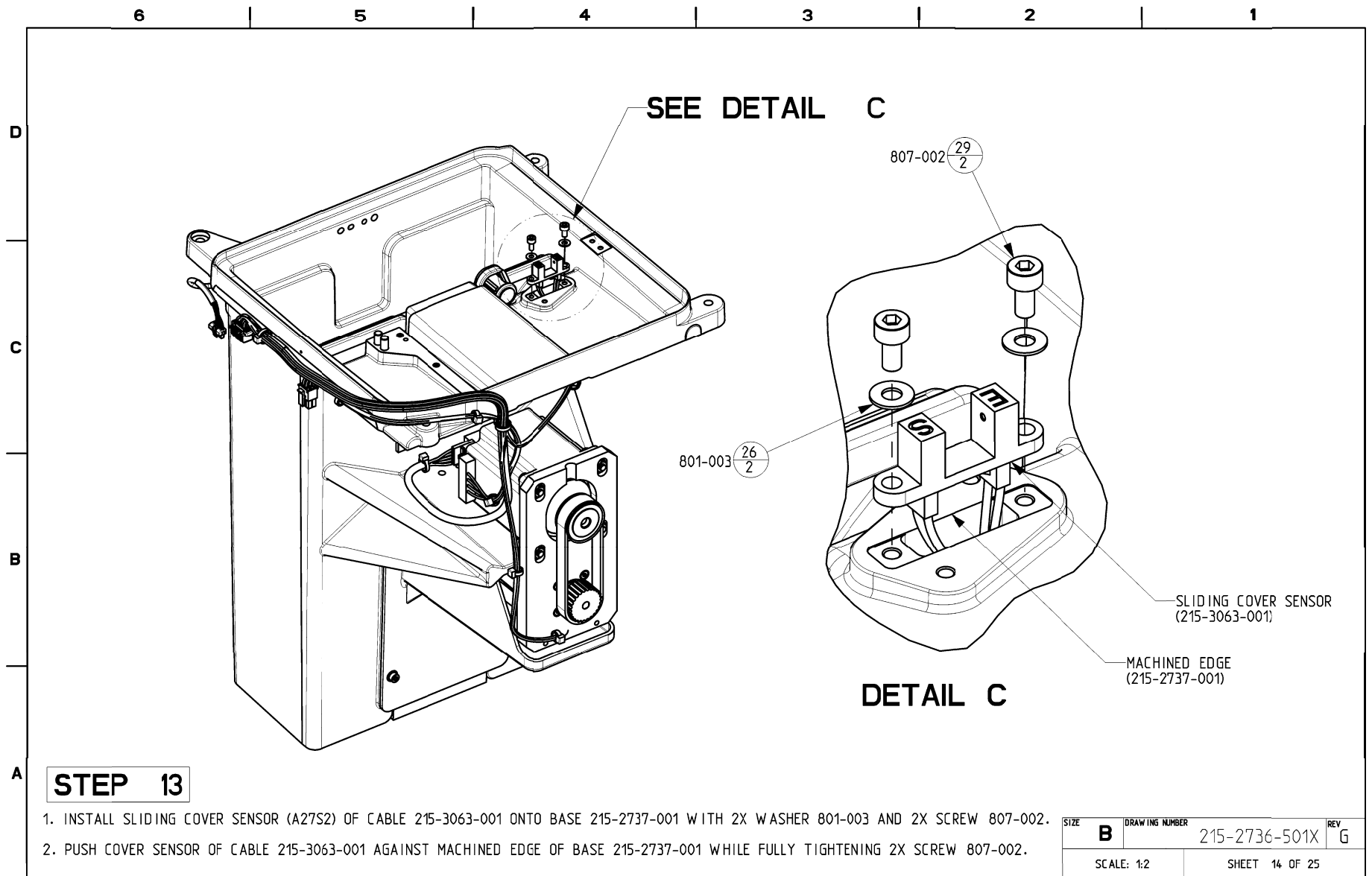


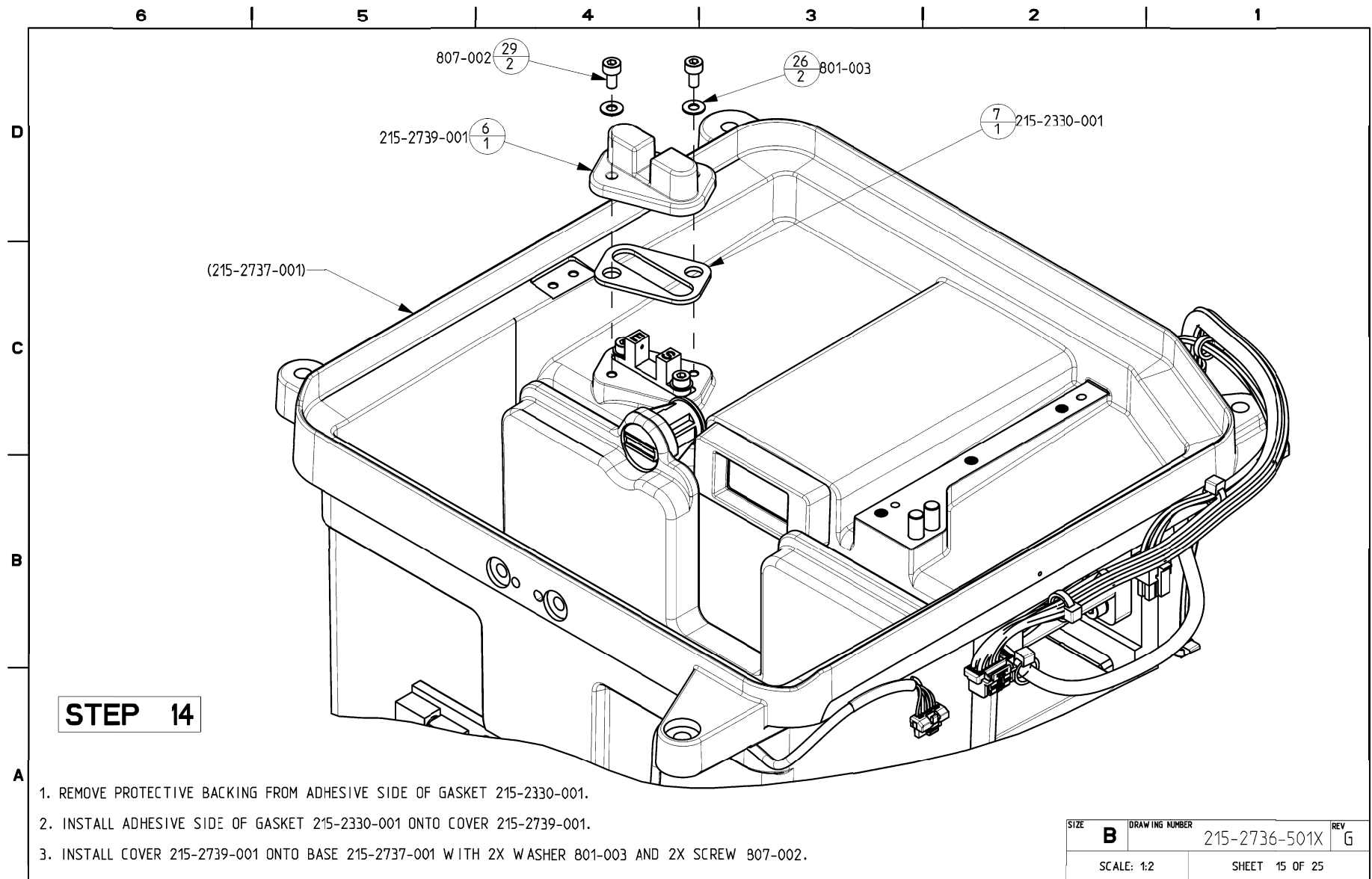


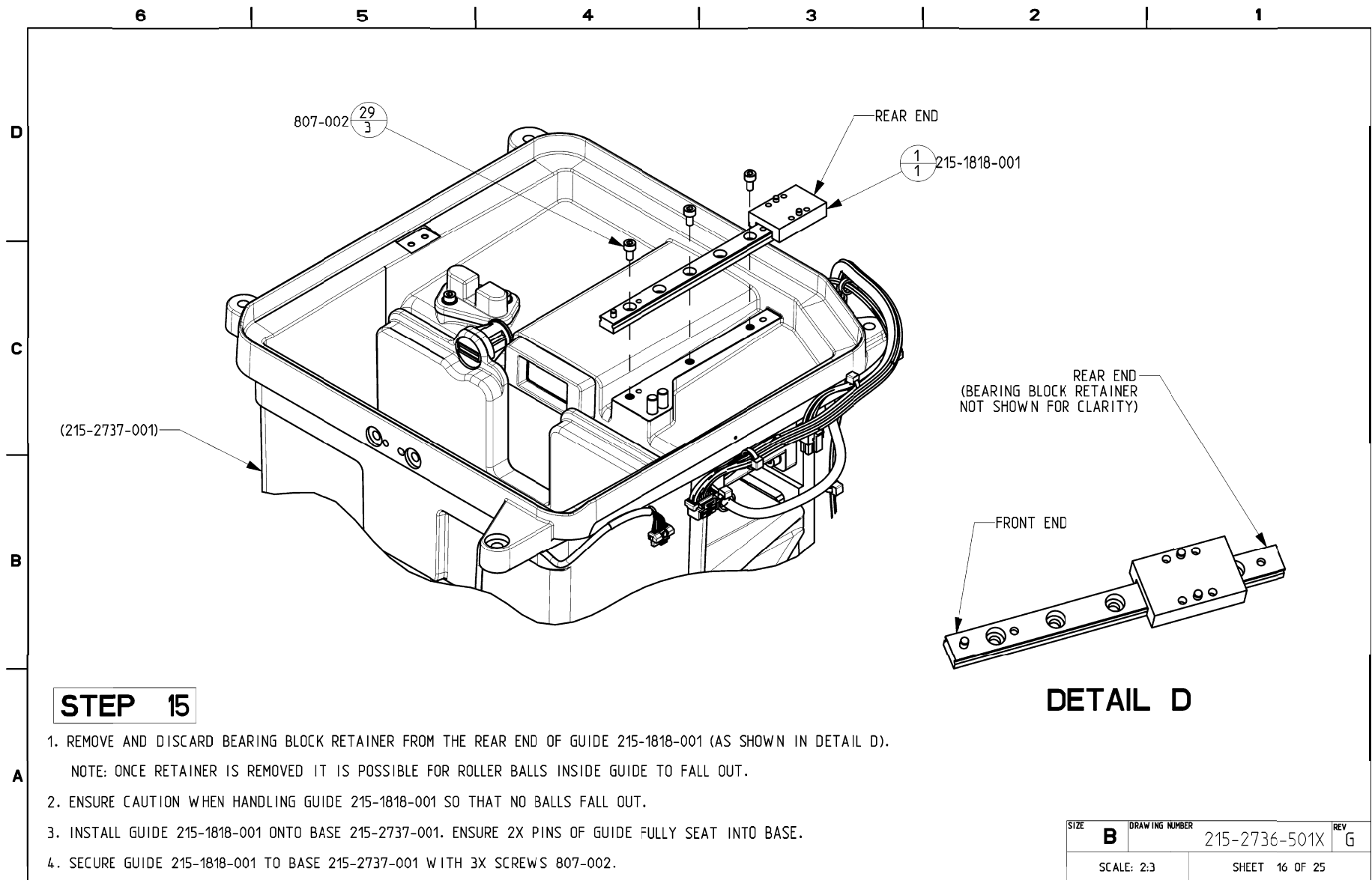
SIZE	B	DRAWING NUMBER	215-2736-501X	REV	G
SCALE: 1:2		SHEET 11 OF 25			

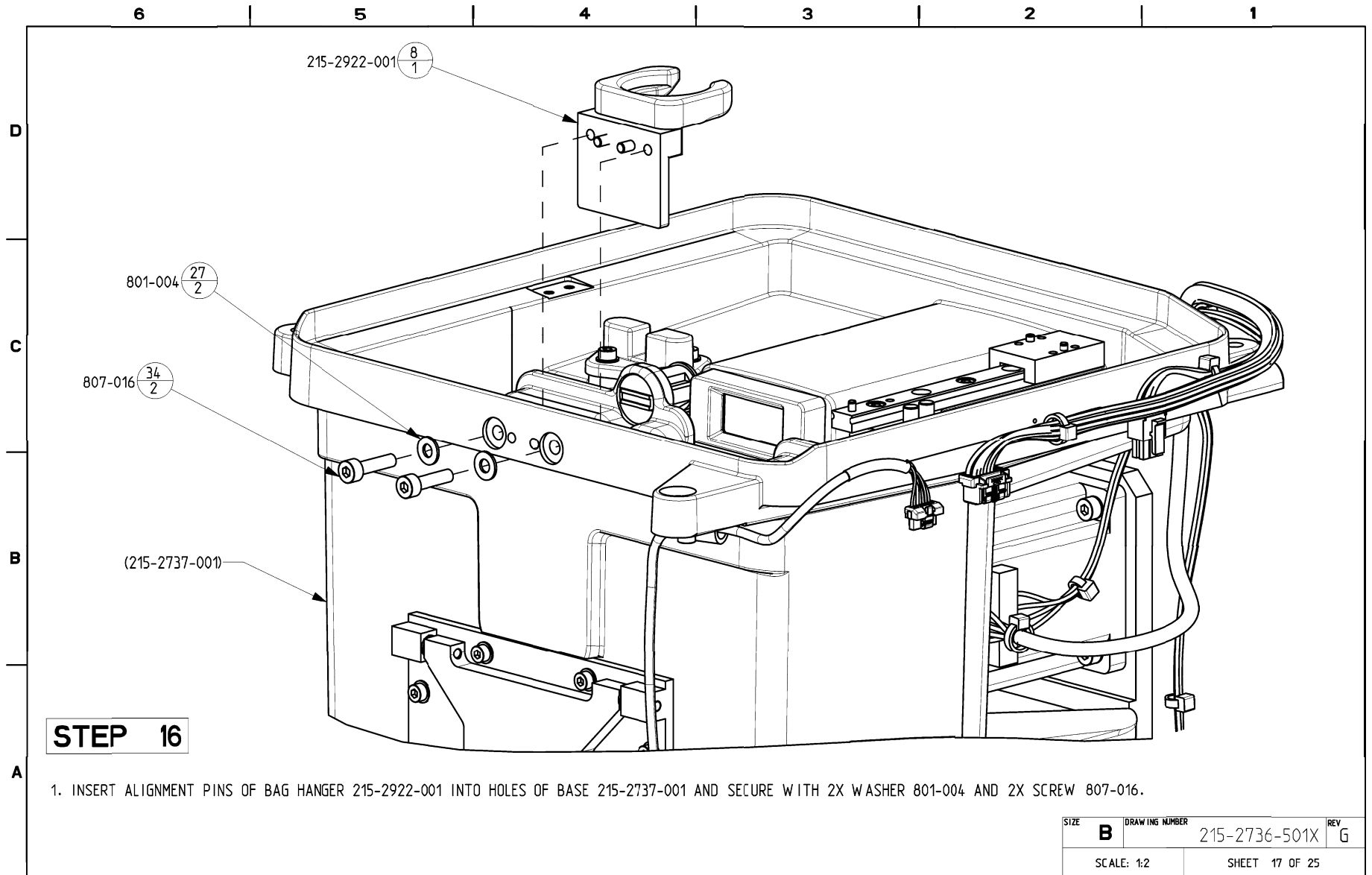


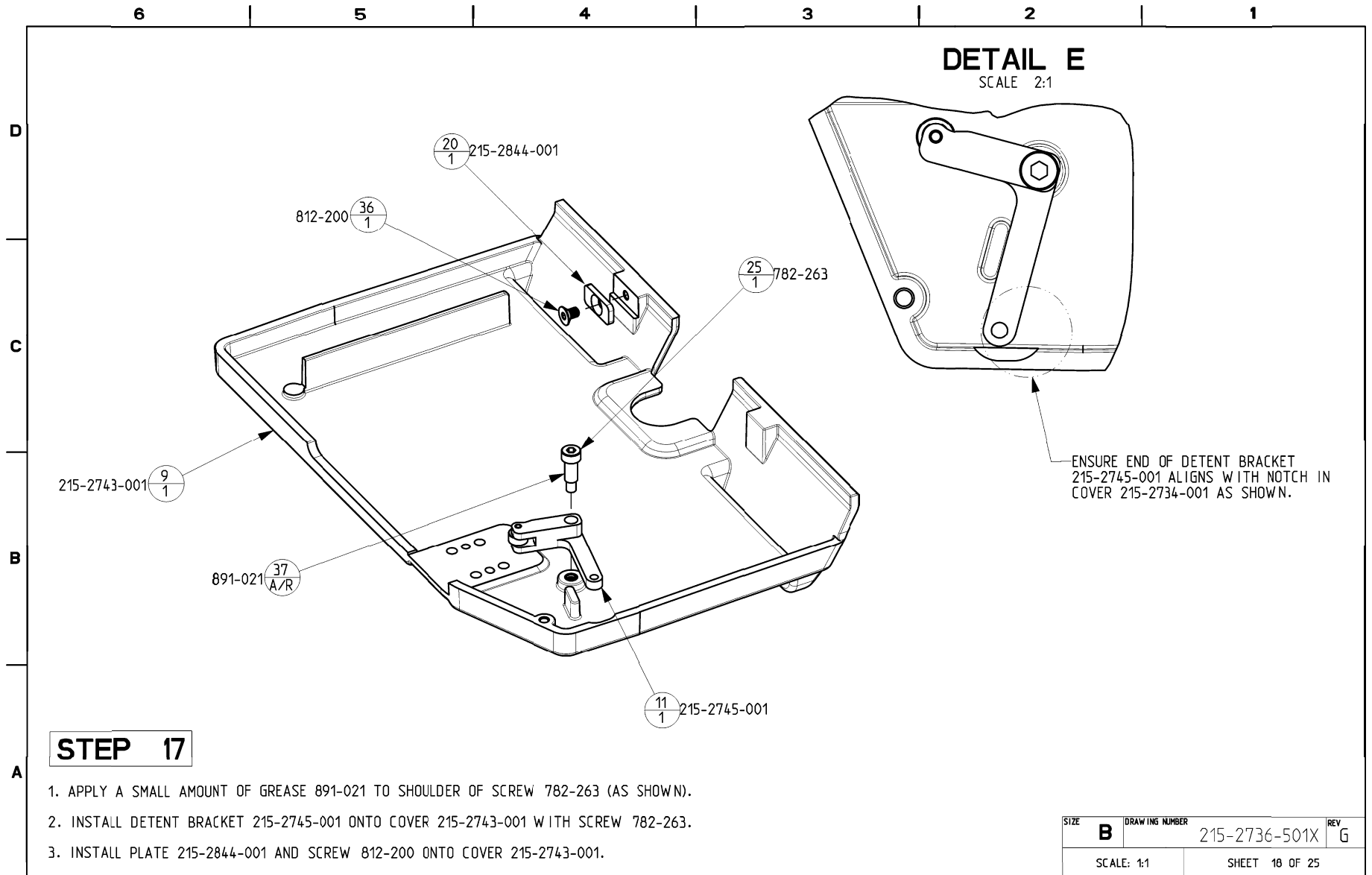


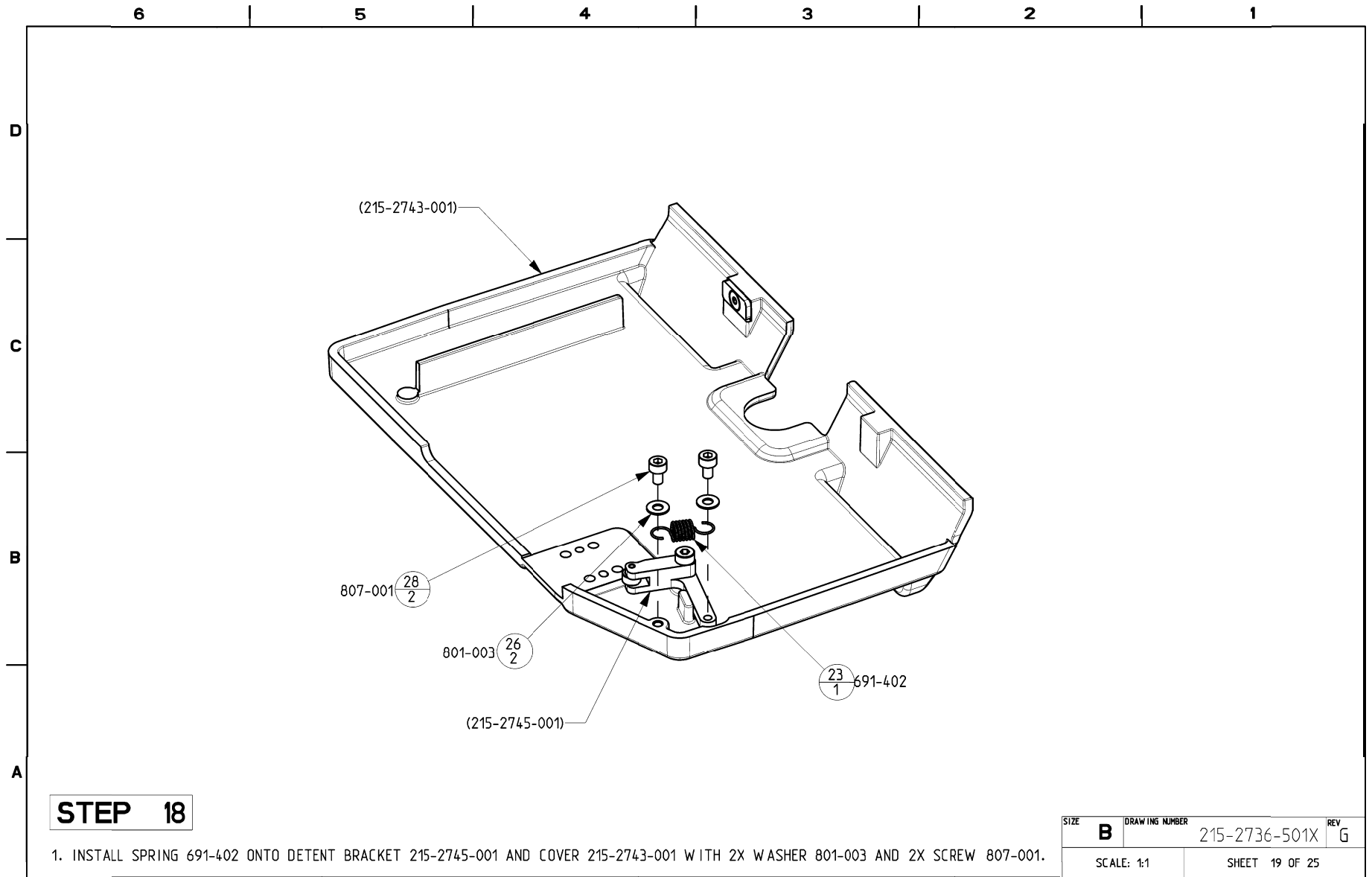












6 | 5 | 4 | 3 | 2 | 1

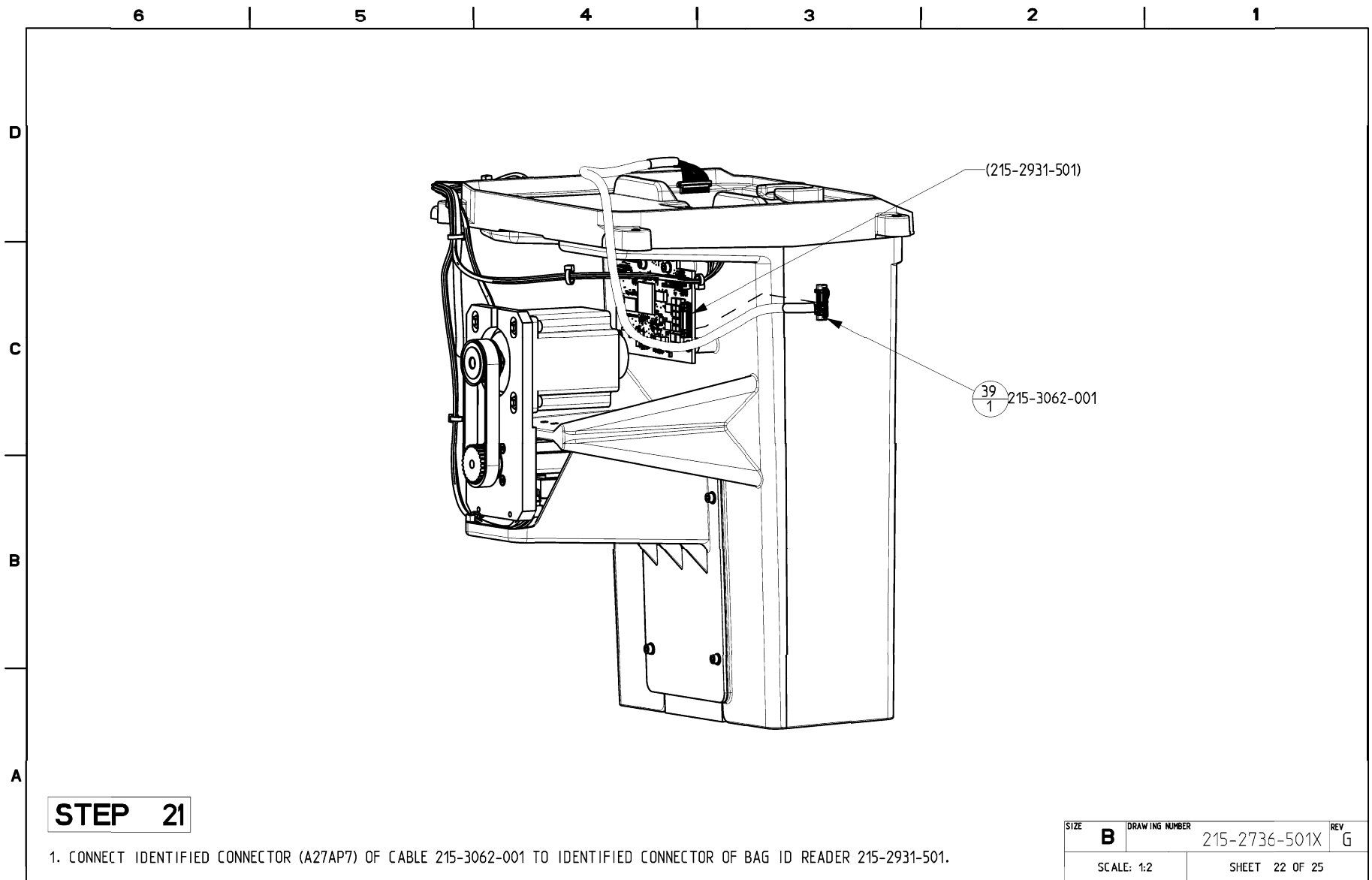
STEP 19

1. INSTALL COVER 215-2743-001 ONTO GUIDE 215-1818-001 WITH 4X WASHER 801-003 AND 4X SCREW 807-001. INSTALL SCREWS BUT DO NOT FULLY TIGHTEN UNTIL NEXT STEP.
2. ALIGN COVER 215-2743-001 SO THAT THE FRONT EDGE IS PARALLEL WITH THE FACE OF PUSH PLATE 215-2738-001. AND USE FIXTURE 995-2150-642 TO ASSIST WITH ALIGNING CIRCULAR CUT-OUT IN SLIDE COVER (215-2743-001) TO BAG HANGER (215-2922-001) WHILE TIGHTENING DOWN SCREWS. SEE DETAIL A.

DETAIL A



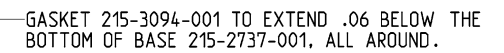
1. INSTALL BRACKET 215-2817-001 ONTO BASE 215-2737-001 WITH 2X WASHER 801-003 AND 2X SCREW 809-001.





A

- | | | | | | |
|------------|----------|----------------|---------------|-----|---|
| SIZE | B | DRAWING NUMBER | 215-2736-501X | REV | G |
| SCALE: 1:2 | | SHEET 23 OF 25 | | | |



A

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4

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2

1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

2. ALL DIMENSIONS ARE IN INCHES.

TOLERANCES:
XXX ± .02
XXX ± .010
ANGLE ± 1°

3. MARK PART NUMBER AND REVISION LETTER APPROXIMATELY WHERE SHOWN.

4. 3D CAD FILE NUMBER 215-1008-002 IS AN INTEGRAL PART OF THIS DRAWING.

DIMENSIONS, FEATURES AND DETAILS NOT PRESENTED IN THIS DRAWING CAN BE FOUND IN THE CAD FILE.

5. ENCLOSURE CHASSIS

5.1 MATERIAL: 5052-H32 AL ALLOY, .063 THK

5.2 FINISH: CHEMICAL FILM PER MIL-DTL-5541F, TYPE II, CLASS 3 (CLEAR) - ROHS COMPLIANT

5.3 FINISH CERTIFICATION TO BE PROVIDED UPON REQUEST.

5.4 CONNECTOR IDENTIFIERS SHALL BE CLEARLY IDENTIFIED ON THE ENCLOSURE IN PERMANENTLY MARKED TEXT

6. THIS DRAWING CONTAINS A TOTAL OF 4 CONTROL DIMENSION NUMBERS. (D)

7. SUGGESTED VENDOR: ADVANTECH (MANUFACTURER PART NUMBER: EBC-AC09MBB-U2x1E)

8. VENDOR MUST REFERENCE ALCON SPECIFICATION SUPPORT DOCUMENT: 955-1450-004 (LATEST REVISION) WITH EACH NEW PURCHASE ORDER

9. REFERENCE 2012-04-20, ADVANTECH EBC-AC09 CARRIER BOARD SCHEMATICS AND .AYOUT.ZIP

9.1 ADVANTECH SCHEMATIC: EBC-AC09 A101-3-3.DSN

9.2 ADVANTECH CARRIER BOARD: EBC-AC09 A101-3-3.BRD

10. PROTECTIVE PACKAGING FOR THE UNIT MUST INCLUDE PROTECTION FOR ALIGNMENT PINS AND CAPTIVE HARDWARE

11. DIMENSION TO BE MEASURED ON THE END CLOSEST TO THE BEND WHILE AVOIDING BEND RADIUS

12. INSPECT AFTER ASSEMBLY OF CAPTIVE SCREW

13. TOLERANCE AND INSPECTION APPLIES TO BASE OF PINS

14. THIS AREA MUST BE DEVOID OF ANY OPENING, HARDWARE OR LABELS.

15. THIS IS PART OF ELECTRICAL OR ELECTRONIC EQUIPMENT AND SHALL COMPLY WITH THE ROHS DIRECTIVE PER ALCON DOCUMENT 908-0000-031.

16. SAFETY CRITICAL COMPONENT

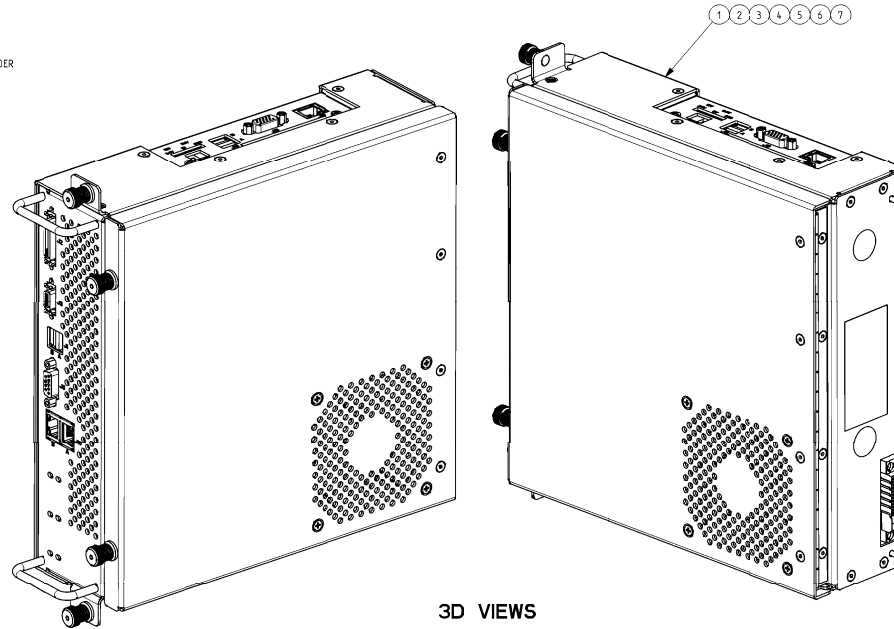
17. MUST BE PARTITIONED WITH A SINGLE PARTITION FORMATTED WITH THE NTFS FILE SYSTEM

18. ALCON P/N 215-3159-001 CAN BE USED AS AN ALTERNATE PART FOR ITEM 1.

SERVICABLE COMPONENT LIST

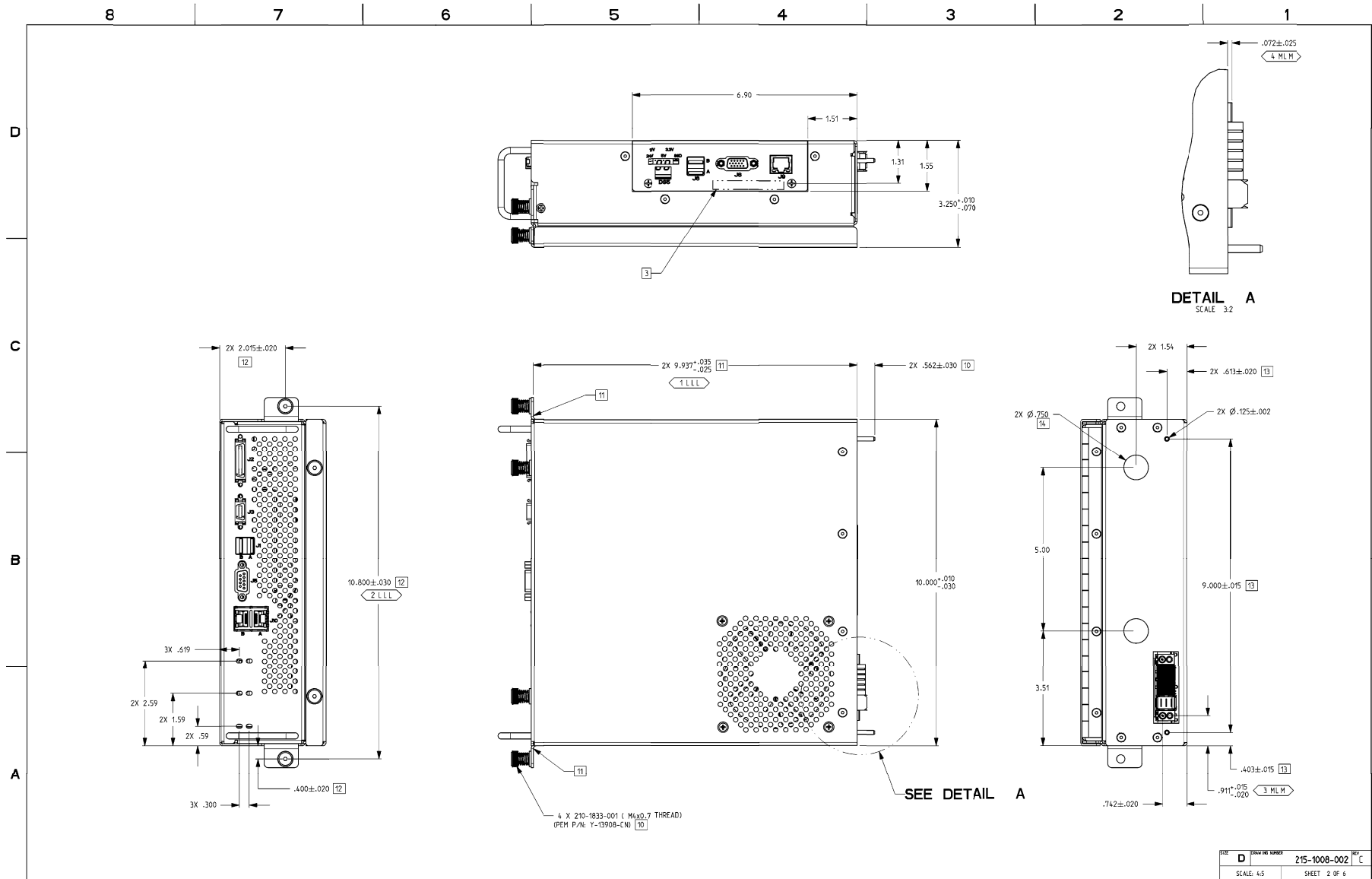
ITEM	QTY	DESCRIPTION	ALCON P/N	VENDOR	VENDOR P/N
1	1	DRIVE, SOLID STATE, 80 GB	215-1282-001	NA	NA
2	2	MEMORY CARD, DDR3 SDRAM, 4GB	154-006	APACER	78.B2GC8AFO
3	1	CABLE ASSY, HEATSINK FAN, HOST	215-2972-001	ADVANTECH	1960052639
4	1	CABLE ASSY, SYSTEM FAN, HOST	215-2881-001	NA	NA
5	1	BATTERY, LITHIUM, 3V, 220 mAh, COIN TYPE	190-022	PANASONIC	CR2032
6	1	CABLE ASSY, SSD, HOST, SATA	023-172	3M	5602-44-0142A-300
7	1	CABLE ASSY, SSD, HOST, PWR	215-3156-001	ADVANTECH	1700021163-01

REVISION HISTORY		
REV	ECN	DATE
P15	NOT RELEASED	01/28/13
A	CN04313TECN	05/06/13
B	CN049939ECN	11/11/13
C	CN068865ECN	12/14/16



3D VIEWS

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
REV	J. MCGUIRE	DATE	9/21/10	
REVISION	M. ESCALANTE	DATE	9/23/10	
APPROVED	A. SAH	DATE	9/23/10	
DATE	2/23/2007			
PDM LINK MODEL ATTRIBUTES	NAME: 215-1008-002			
		DESCRIPTION HOST ASSY. ADVANTECH		
		SIZE	D	CRASH FILE NUMBER
		SCALE	4:5	215-1008-002
		SHEET	1 OF 6	REV C
		VERSION	C.1	



8 7 6 5 4 3 2 1

D

CONNECTOR PIN ASSIGNMENTS
TABLE 1: SYSTEM BACKPLANE (BLINDMATE) CONNECTOR PIN ASSIGNMENTS

J7A	SIGNAL NAME	DESCRIPTION	I/O
A1	AUDIO-OUT-R	AUDIO OUT RIGHT W/O AMPLIFIER	O
A2	AUD_GND	AUDIO GROUND	P
A3	+5VSB	+5V STANDBY	P
A4	GND	GROUND	P
A5	GND	GROUND	P
A6	GND	GROUND	P
A7	GND	GROUND	P
A8	GND	GROUND	P
A9	RxD1	RECEIVED DATA	I
A10	TxD1	TRANSMIT DATA	O
A11	GND	GROUND	P
A12	GND	GROUND	P

(1) J7A CARRIES RS232 SIGNALS TO THE MULTIFUNCTION BOARD.

J7B	SIGNAL NAME	DESCRIPTION	I/O
B1	AUDIO-OUT-L	AUDIO OUT LEFT W/O AMPLIFIER	O
B2	AUD_GND	AUDIO GROUND	P
B3	GND	GROUND	P
B4	GND		
B5	GND		
B6	GND		
B7	GND		
B8	GND		
B9	GND		
B10	GND		
B11	GND		
B12	GND		

J7C	SIGNAL NAME	DESCRIPTION	I/O
C1	GND	GROUND	P
C2	GND	GROUND	P
C3	--	--	--
C4	--	--	--
C5	GND	GROUND	P
C6	--	--	--
C7	--	--	--
C8	GND	GROUND	P
C9	--	--	--
C10	--	--	--
C11	GND	GROUND	P
C12	PS_ON#	HOST POWER ON CTRL, ACTIVE LOW	O

J7D	SIGNAL NAME	DESCRIPTION	I/O
D1	GND	GROUND	P
D2	GND	GROUND	P
D3	GND	GROUND	P
D4	GND	GROUND	P
D5	RxD0	RECEIVE DATA	I
D6	TxD0	TRANSMIT DATA	O
D7	GND	GROUND	P
D8	GND	GROUND	P
D9	GND	GROUND	P
D10	--	--	--
D11	--	--	--
D12	GND	GROUND	P

(2) J7D CARRIES RS232 SIGNALS TO THE CONSOLE I/O PANEL.

C

B

J7E	SIGNAL NAME	DESCRIPTION	I/O
E1	GND	GROUND	P
E2	GND		
E3	GND		
E4	GND		
E5	GND		
E6	GND	GROUND	P
E7	GND		
E8	GND		
E9	GND		
E10	GND		
E11	GND		
E12	GND		

J7F	SIGNAL NAME	DESCRIPTION	I/O
F1	+5_USB	+5V	P
F2	D-	DATA	I/O
F3	D+		I/O
F4	GND	GROUND	P
F5	--	--	--
F6	ISO_GND	ISO GROUND FROM FLEXRAY CABLE	P
F7	FR B+	FLEXRAY CHANNEL B+/B- DIFFERENTIAL PAIR 80-110 OHMS IMPEDANCE	I/O
F8	FR B-		I/O
F9	ISO_GND	ISO GROUND FROM FLEXRAY CABLE	P
F10	FR A-	FLEXRAY CHANNEL A+/A- DIFFERENTIAL PAIR 80-110 OHMS IMPEDANCE	I/O
F11	FR A+		I/O
F12	ISO_GND	ISO GROUND FROM FLEXRAY CABLE	P

J7P	SIGNAL NAME
ROW B	CHASSIS
ROW D	+24.5V_GND
ROW F	+24.5V

(3) ALL PINS ON EACH OF THESE ROWS ARE CONNECTED IN A RAIL.

A

8 7 6 5 4 3 2 1

CONNECTOR PIN ASSIGNMENTS

TABLE 2: FRONT PANEL LVDS CONNECTOR PIN ASSIGNMENTS

J2	SIGNAL NAME	J2	SIGNAL NAME
1	RX00-	19	RX00+
2	RX01-	20	RX01+
3	RX02-	21	RX02+
4	GND	22	GND
5	RX0C-	23	RX0C+
6	RX03-	24	RX03+
7	RXE0-	25	RXE0+
8	GND	26	GND
9	RXE1-	27	RXE1+
10	GND	28	GND
11	RXE2-	29	RXE2+
12	RXEC-	30	RXEC+
13	RXE3-	31	RXE3+
14	GND	32	GND
15	3.3V, GND, OR N/C SEE NOTE (4)	33	GND OR N/C SEE NOTE (5)
16	VCC SEE NOTE (6)	34	GND
17	VCC SEE NOTE (6)	35	GND
18	VCC SEE NOTE (6)	36	GND

(4) JUMPER SELECT 3.3V, GND OR N/C FOR LVDS DISPLAY PANEL PIN 25.
(5) JUMPER SELECT GND OR N/C FOR LVDS DISPLAY PANEL PIN 27.
(6) REFER TO SSD 4.4.2.1. POWER TO THE LCD SHALL FEATURE ONBOARD JUMPER SELECTABLE +12V@1A OR +5V@2A.

TABLE 3: FRONT PANEL TOUCHSCREEN POWER AND BACKLIGHT INVERTER PIN ASSIGNMENTS

J3	SIGNAL NAME	J3	SIGNAL NAME
1	+12V_BKL	8	+12_BKL_GND
2	+12V_BKL	9	+12_BKL_GND
3	+12V_BKL	10	+12_BKL_GND
4	+12V_BKL	11	+12_BKL_GND
5	BKL_EN	12	BKL_CTR
6	GND	13	GND
7	+5V	14	+5V

SIZE	DRAWING NUMBER	REV
D	215-1008-002	C
SCALE: 4:5	SHEET 4 OF 6	

8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

CONNECTOR PIN ASSIGNMENTS

TABLE 4: FRONT PANEL POWER STATUS PIN ASSIGNMENTS

J5	SIGNAL NAME
1	+3.3V
2	+12V
3	N/C
4	+5VSB
5	+5V
6	N/C
7	N/C
8	N/C
9	GND

TABLE 6: FRONT PANEL USB CONNECTOR

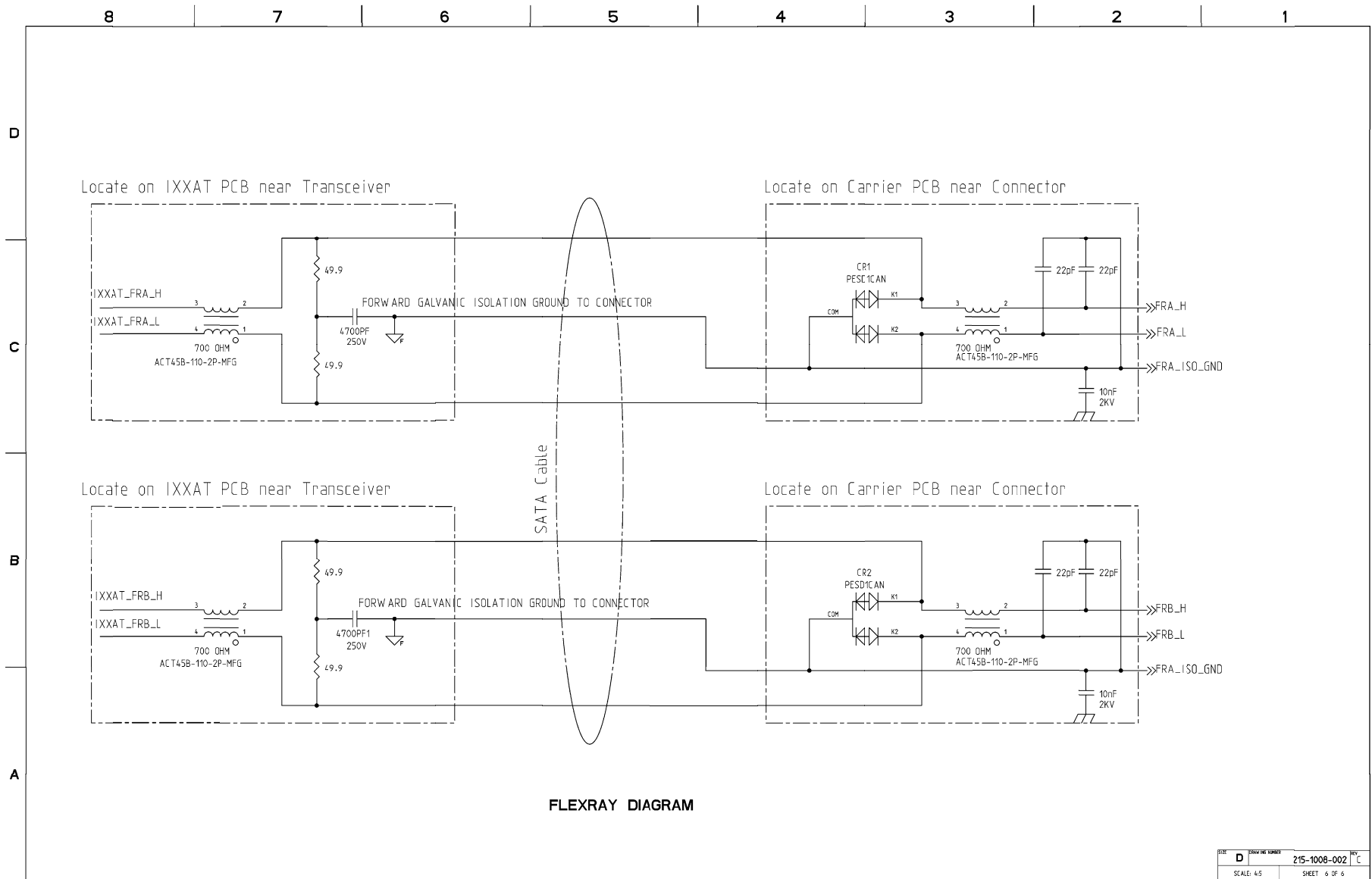
J1-A	SIGNAL NAME	J1-B	SIGNAL NAME
1	+5V	1	+5V
2	USB1-	2	USB0-
3	USB1+	3	USB0+
4	GND	4	GND

TABLE 5: FLEXRAY DATA CONNECTOR PIN ASSIGNMENTS

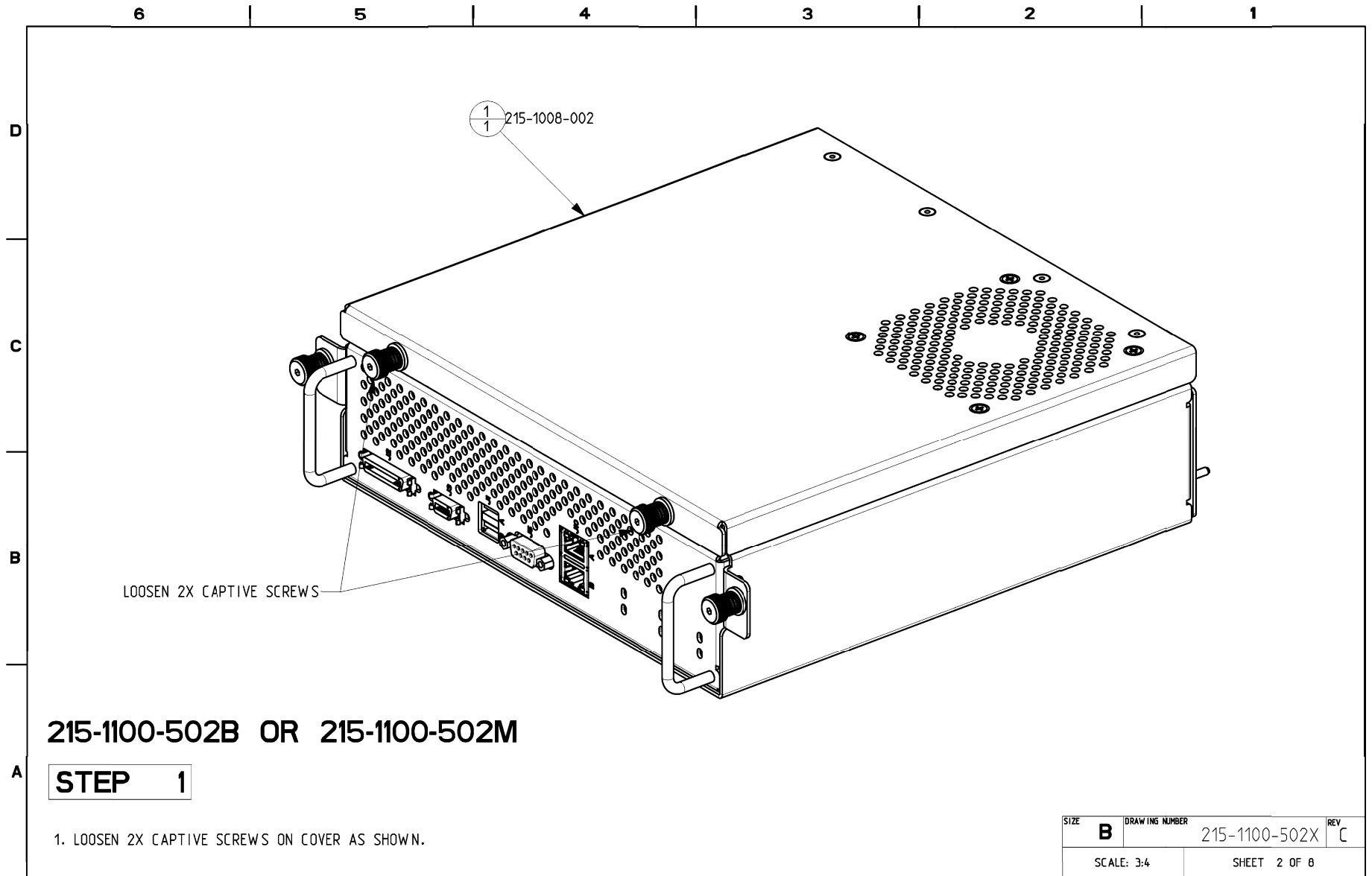
J4	SIGNAL NAME	DESCRIPTION	I/O
1	ISO_GND	ISO GROUND FROM FLEXRAY CABLE	P
2	FR_A+	FLEXRAY CHANNEL A-/A+ DIFFERENTIAL PAIR 80-110 OHMS IMPEDANCE	I/O
3	FR_A-		I/O
4	ISO_GND	ISO GROUND FROM FLEXRAY CABLE	P
5	FR_B+	FLEXRAY CHANNEL B-/B+ DIFFERENTIAL PAIR 80-110 OHMS IMPEDANCE	I/O
6	FR_B-		I/O
7	ISO_GND	ISO GROUND FROM FLEXRAY CABLE	P

TABLE 7: FRONT PANEL LAN CONNECTOR

J10-A	SIGNAL NAME	J10-B	SIGNAL NAME
1	TX1_A+	1	TX1_B+
2	TX1_A-	2	TX1_B-
3	TX2_A+	3	TX2_B+
4	TX3_A+	4	TX3_B+
5	TX3_A-	5	TX3_B-
6	TX2_A-	6	TX2_B-
7	TX4_A+	7	TX4_B+
8	TX4_A-	8	TX4_B-



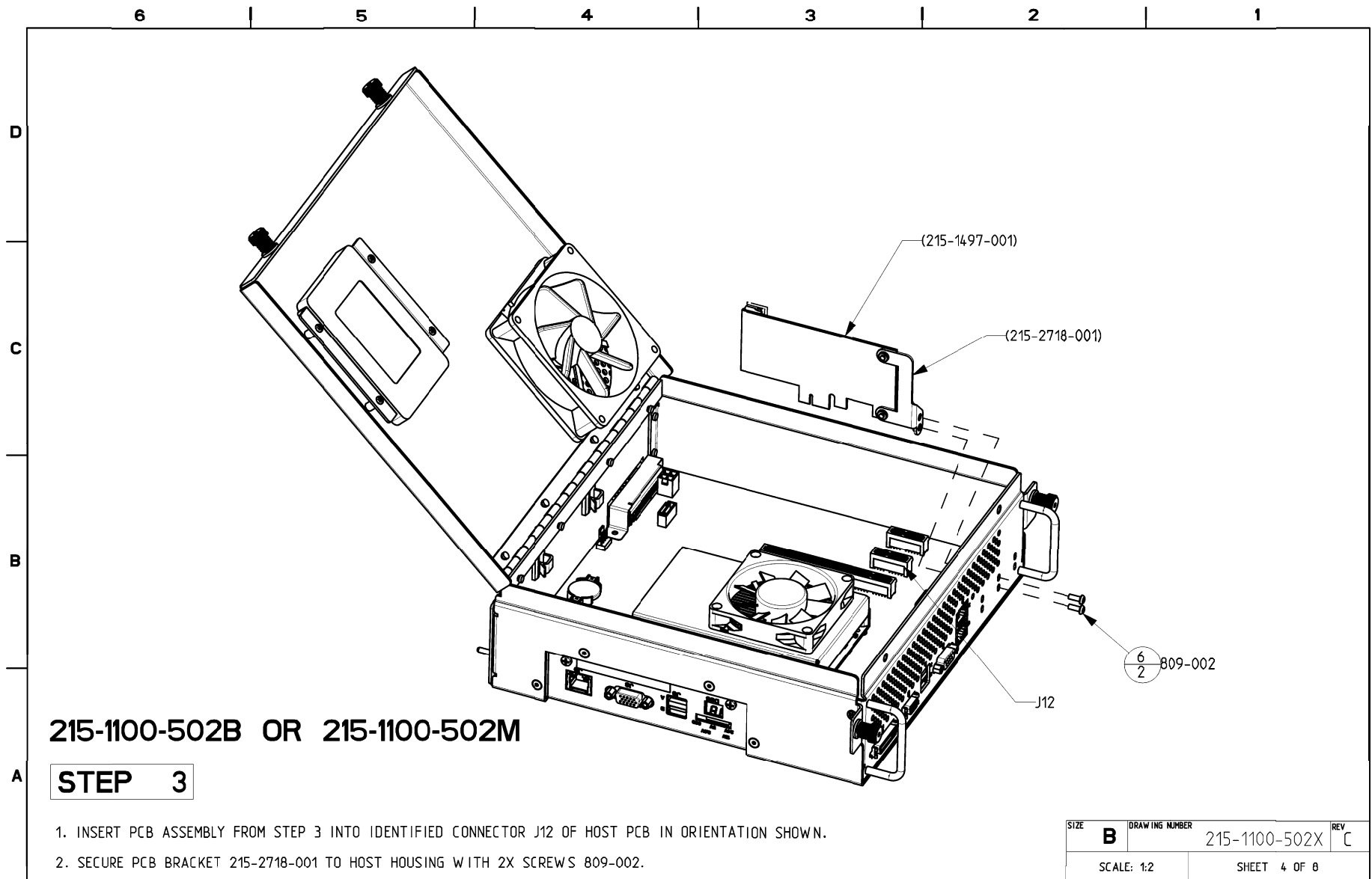
6.326



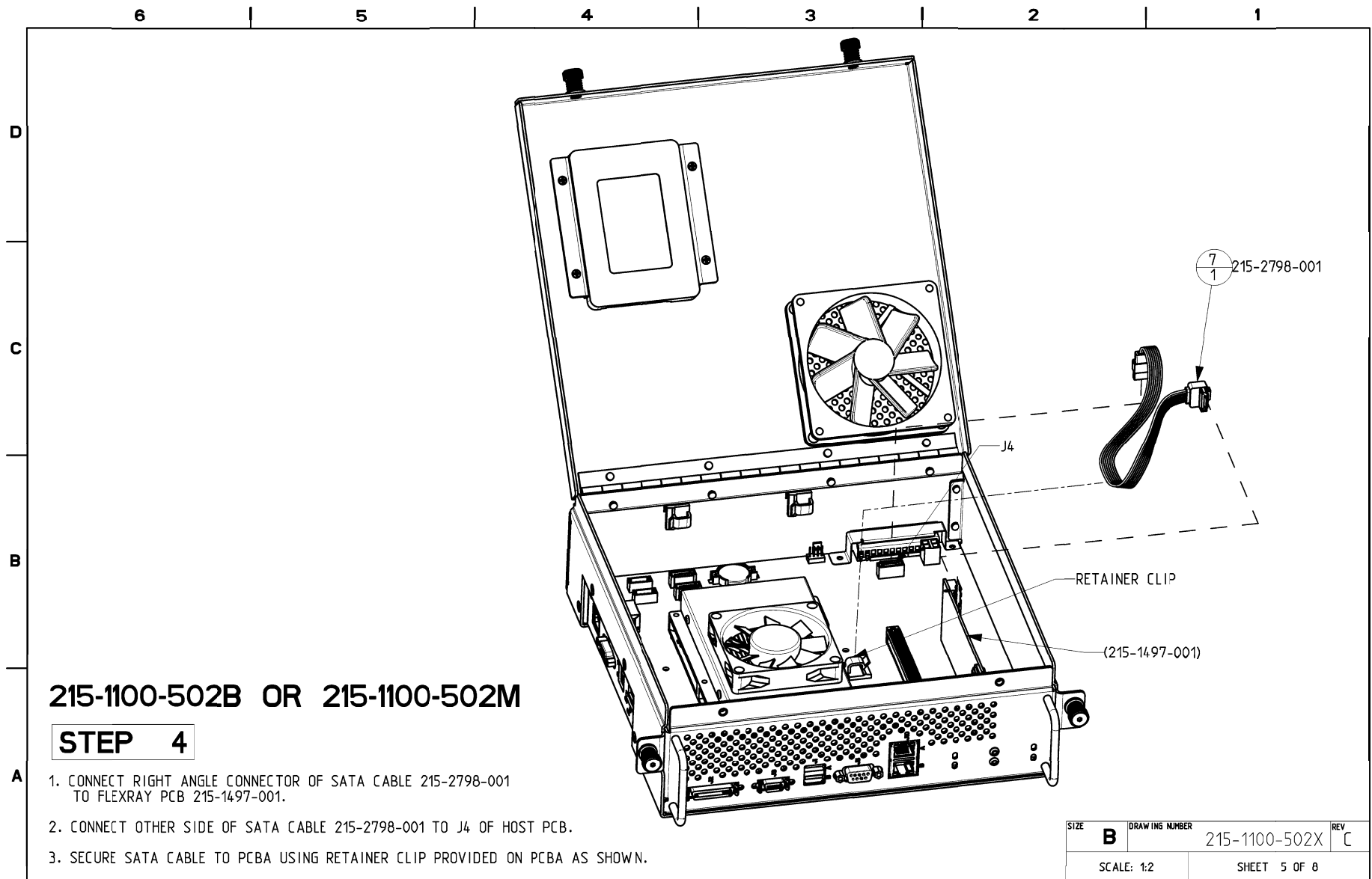


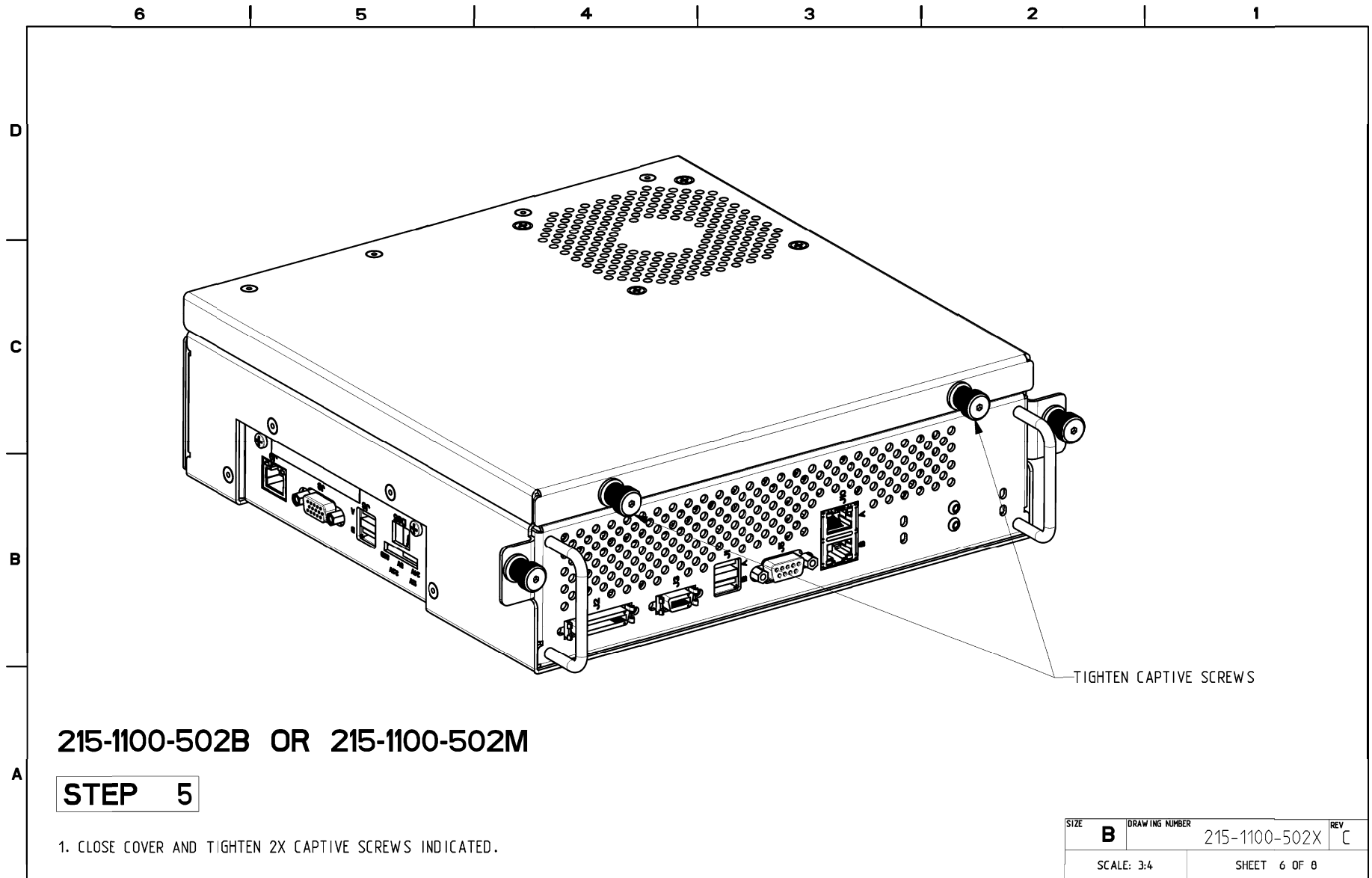
STEP 2

- | | | | | | |
|------------|----------|----------------|---------------|-----|----------|
| SIZE | B | DRAWING NUMBER | 215-1100-502X | REV | C |
| SCALE: 2:1 | | SHEET 3 OF 8 | | | |



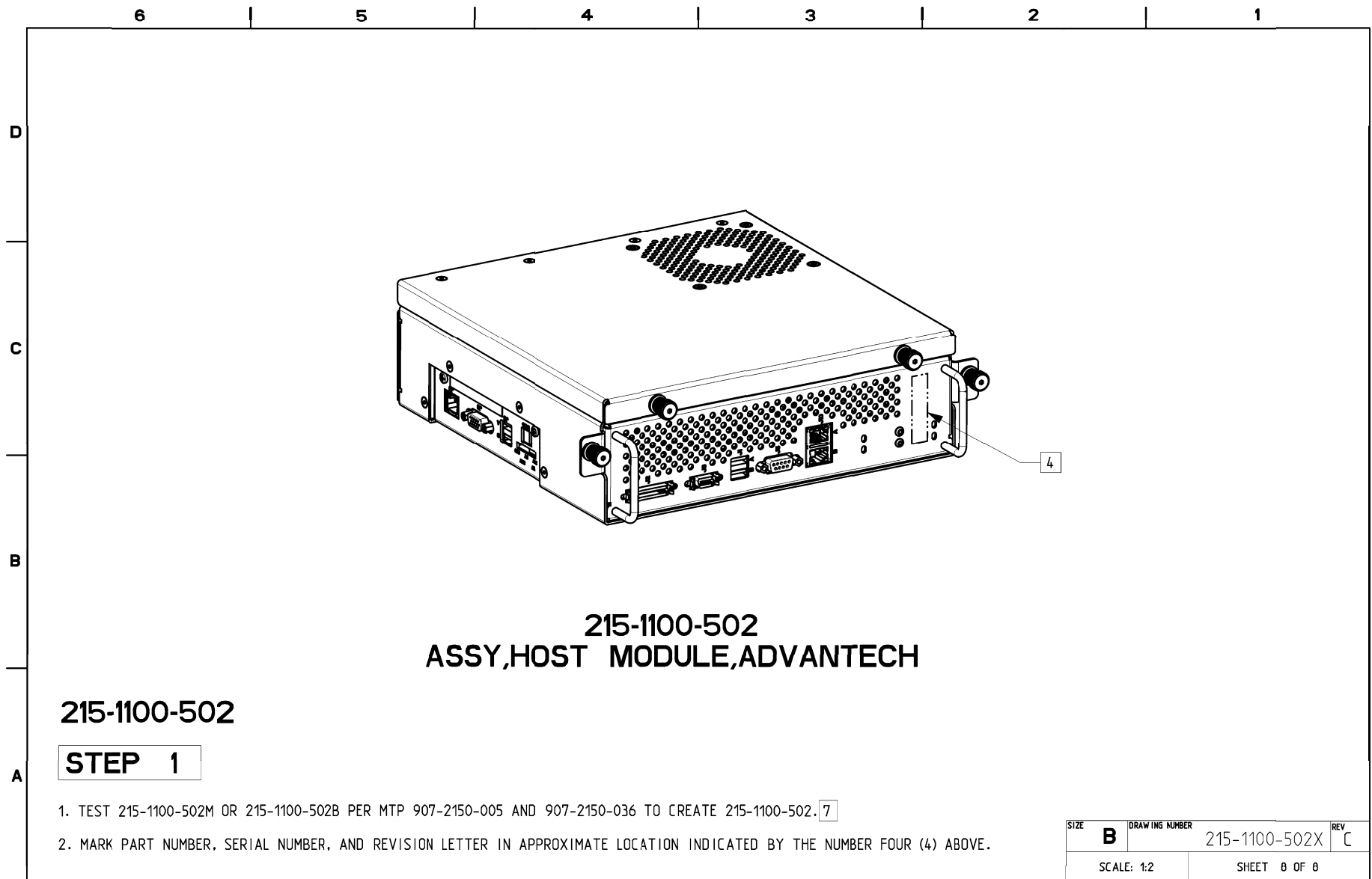
SIZE	B	DRAWING NUMBER	215-1100-502X	REV	C
SCALE: 1:2		SHEET 4 OF 8			







SIZE B	DRAWING NUMBER 215-1100-502X	REV C
SCALE: 3:4		SHEET 7 OF 8



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NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.100-2004, ASME Y14.5-2009, AND ALCON SPECIFICATION 701-026.

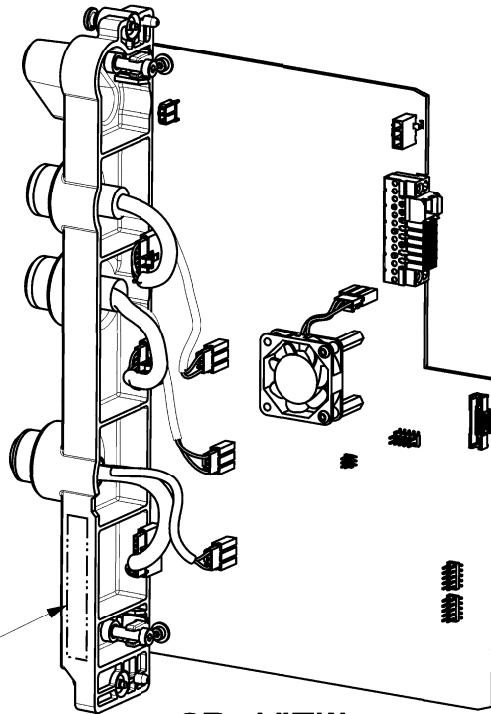
2.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.

3. PART NUMBER, REVISION LETTER AND CONSOLE SERIAL NUMBER MARKING.

4. FOR STAND ALONE SUB-ASSEMBLY JOBS USE MAP 992-2150-004.

5. 215-1009-501S IS MADE FROM ONE 215-1009-501.

6. -501S: TEST PER MTP 907-2150-022, FIELD SERVICE TEST MATRIX.




3D VIEW

TABULATION

PART NUMBER	REV	DESCRIPTION	PART NUMBER	DESCRIPTION
215-1009-501	L	ASSY,ULTRASOUND	215-1009-501S	ASSY,ULTRASOUND,SERVICE

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION		MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL					
BY J. MCGUIRE		DATE 7/3/13	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSFERRED TO OTHER DOCUMENTS OR DISCLOSED TO OTHERS OR USED FOR MANUFACTURING OR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.  Irvine, California 92630	DESCRIPTION ASSY,ULTRASOUND	
CHECKED C. RUELAS	DATE 7/3/13	SIZE B		DRAWING NUMBER 215-1009-501X	REV L
APPROVED D.KASTELIC	DATE 7/3/13				
FORMAT REVISION 2/23/2007					
PDMLINK MODEL ATTRIBUTES		NAME: 215-1009-501_PROC		VERSION: L.1	
		SCALE: 1:2		SHEET 1 OF 8	

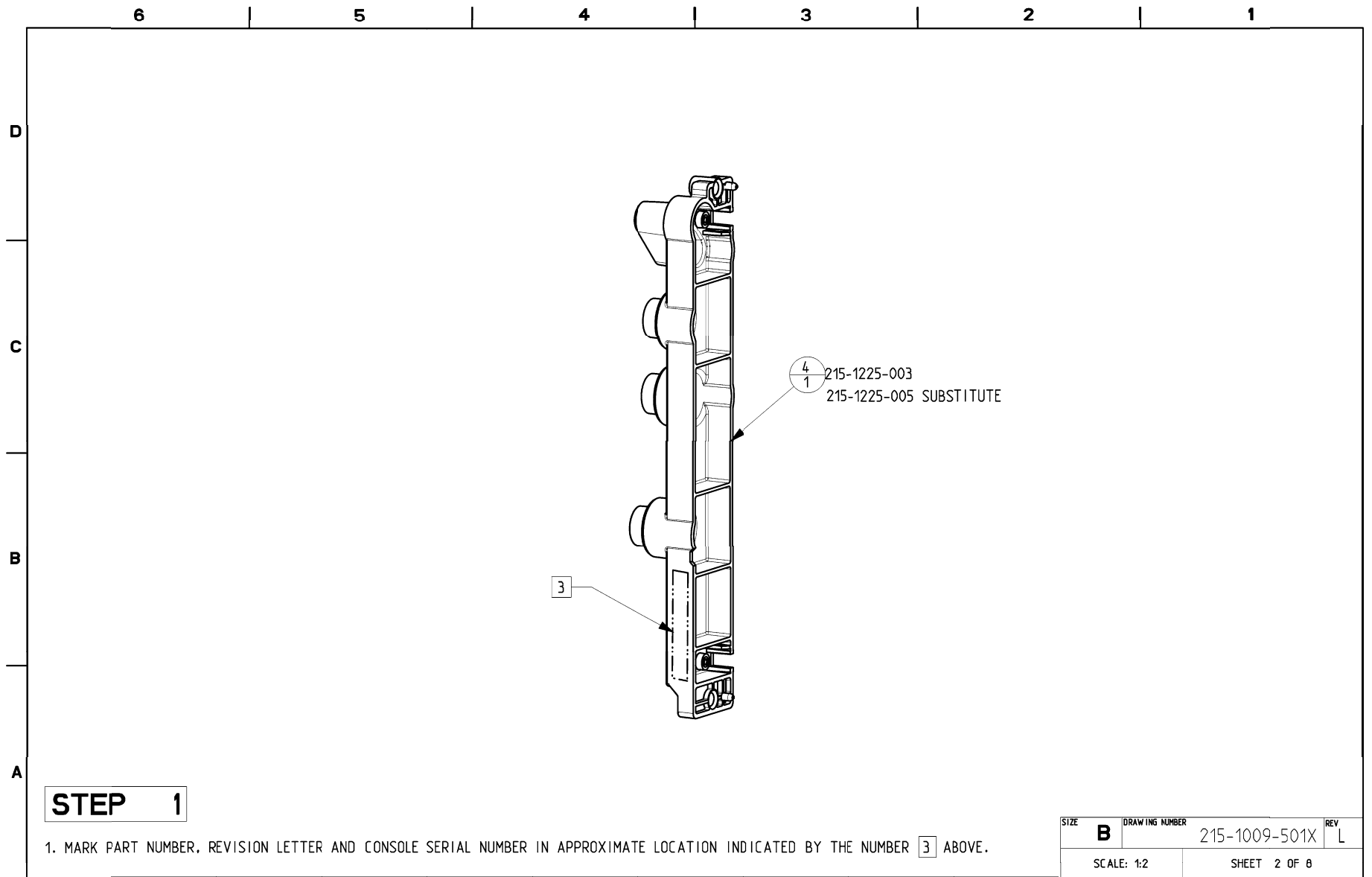
REVISION HISTORY

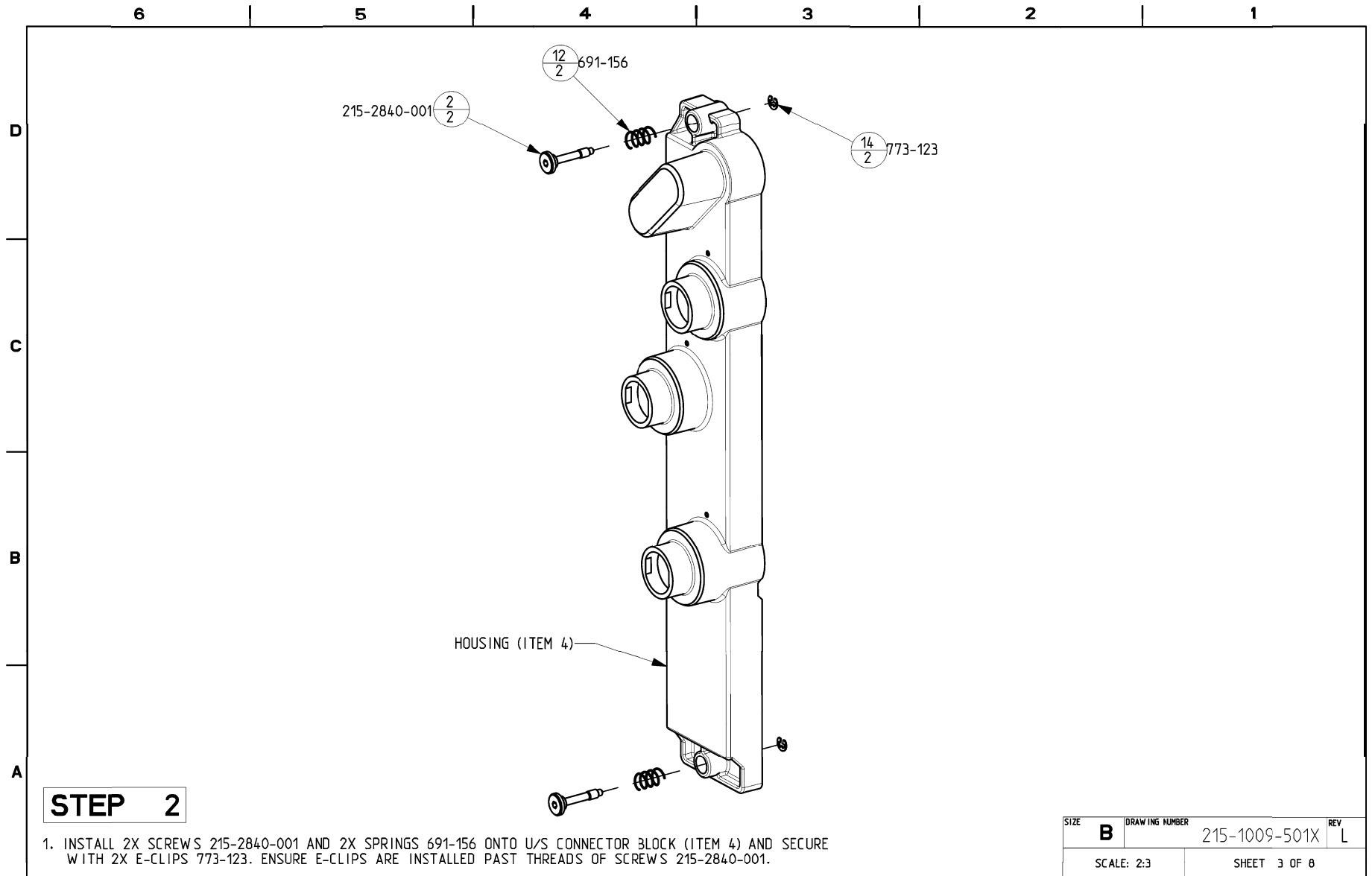
REV	ECN	DATE
P12	NOT RELEASED	07/03/13
A	CN045877ECN	07/22/13
B	CN046863ECN	08/06/13
C	CN057655ECN	09/24/14
D	CN058920ECN	11/20/14
E	CN059772ECN	02/03/15
F	CN061254ECN	05/01/15
G	CN063791ECN	09/08/15
H	CN070228ECN	12/09/16
J	CN071888ECN	04/17/17
K	CN075919ECN	12/06/17
L	CN076565ECN	01/31/18

DRAWING NUMBER

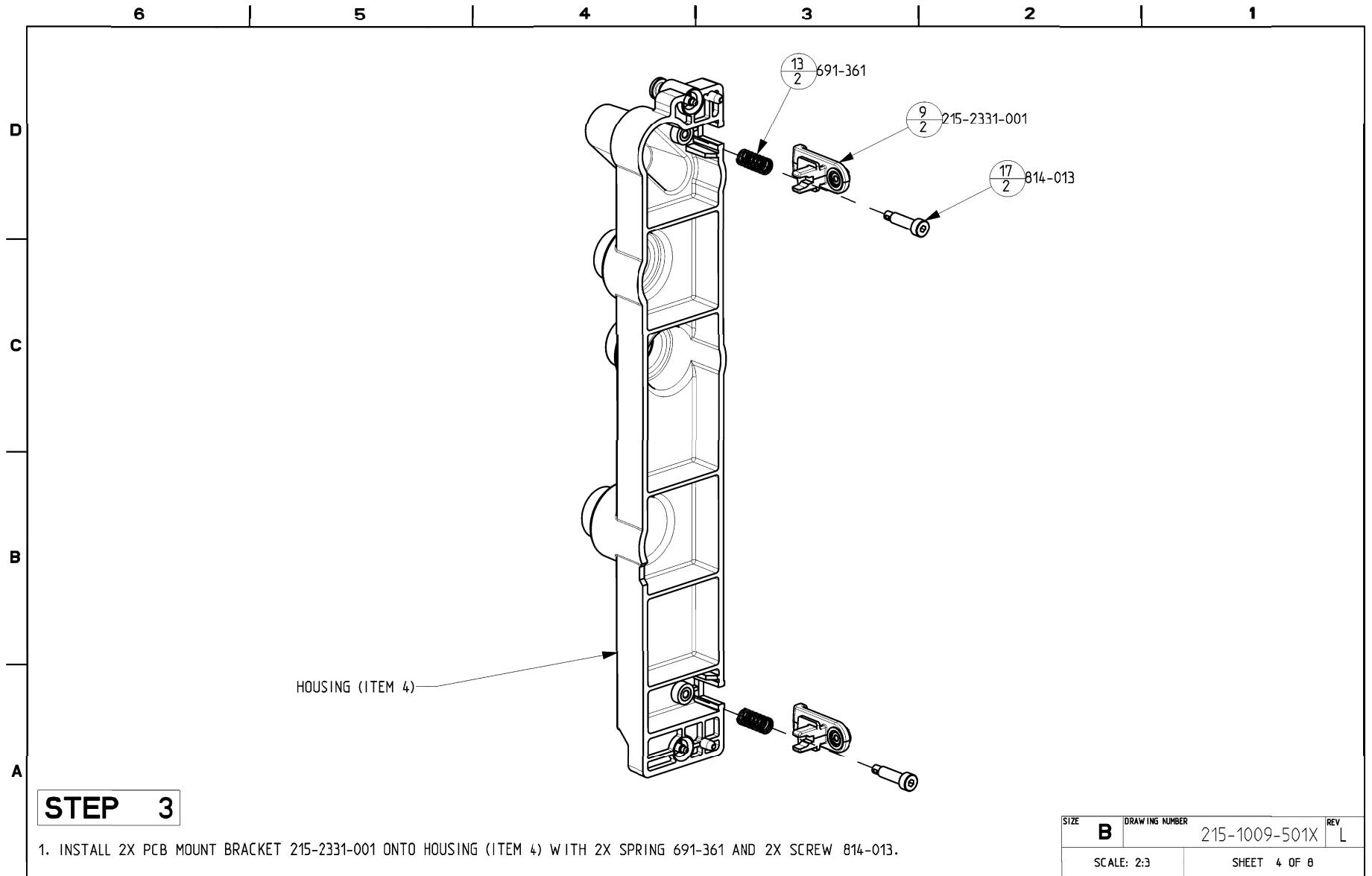
215-1009-501X

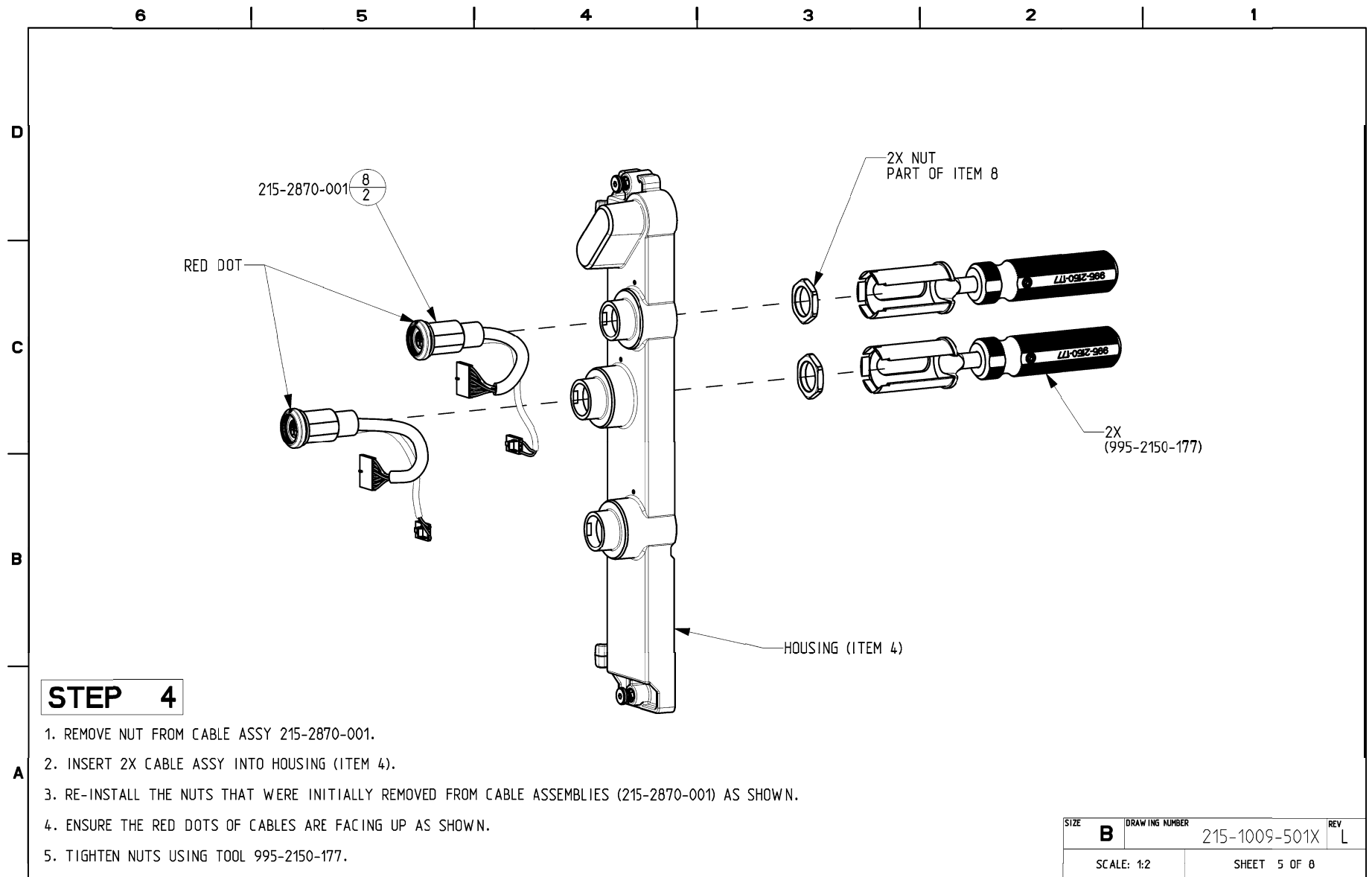
REV
L

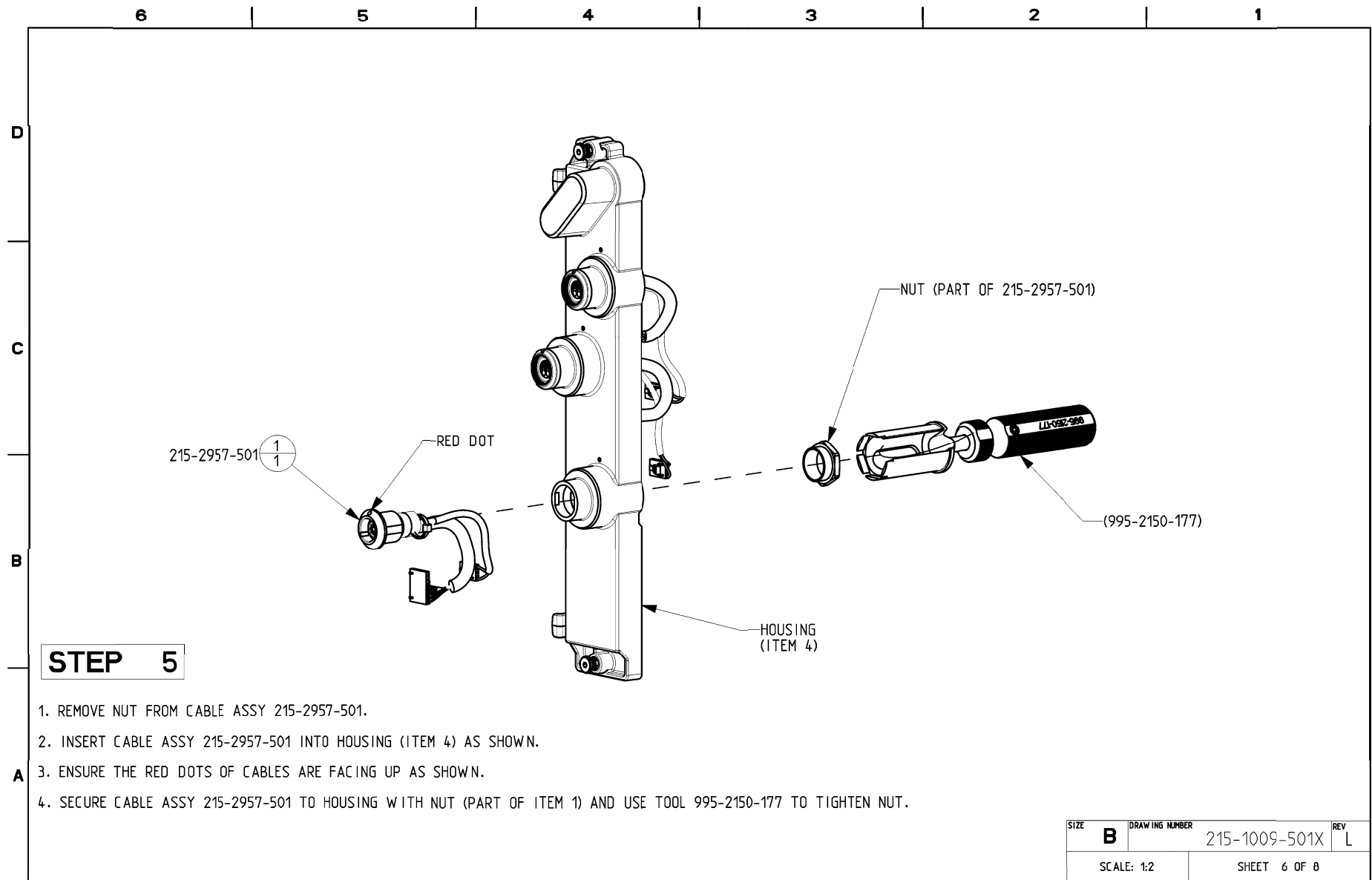


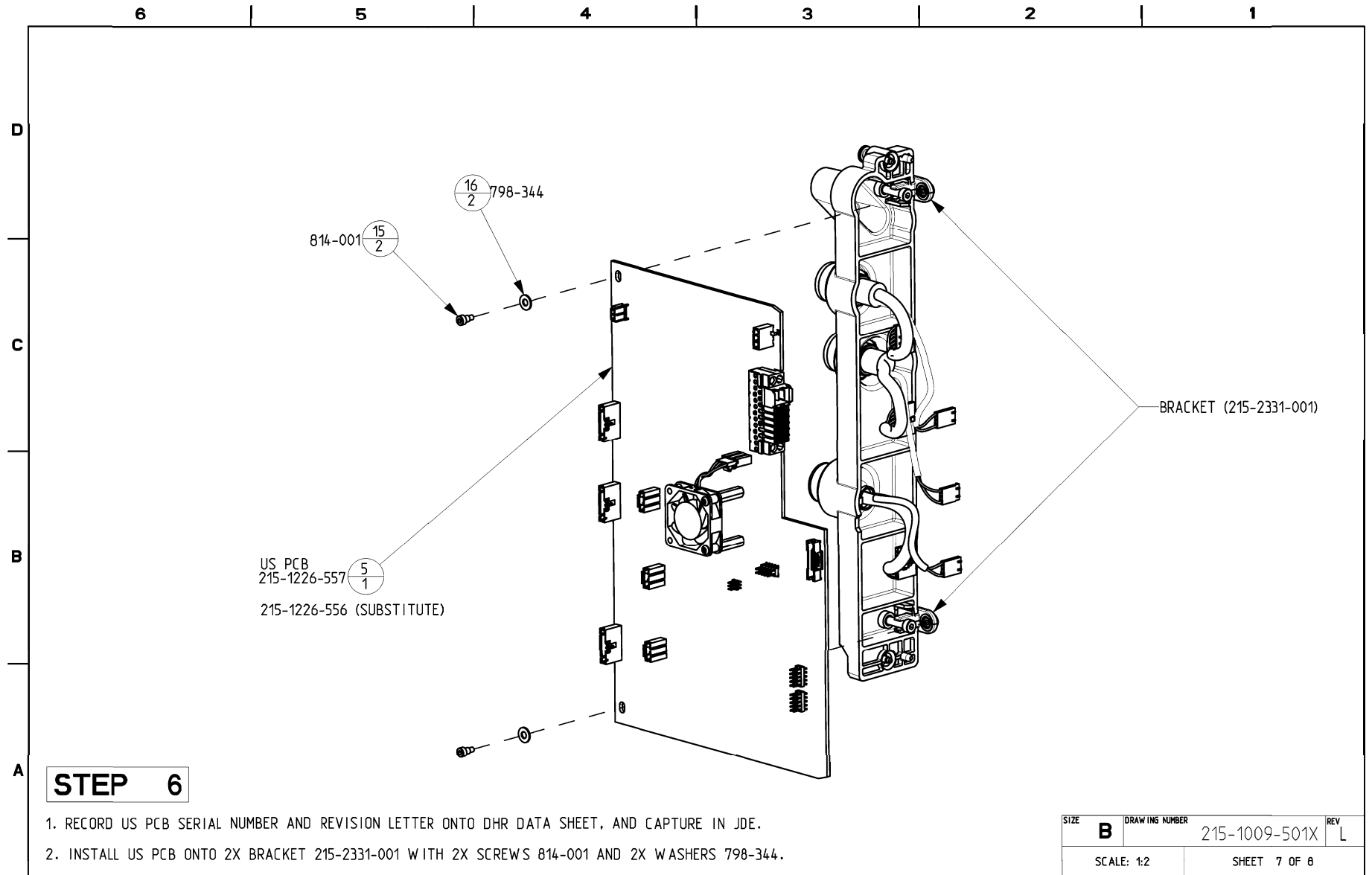


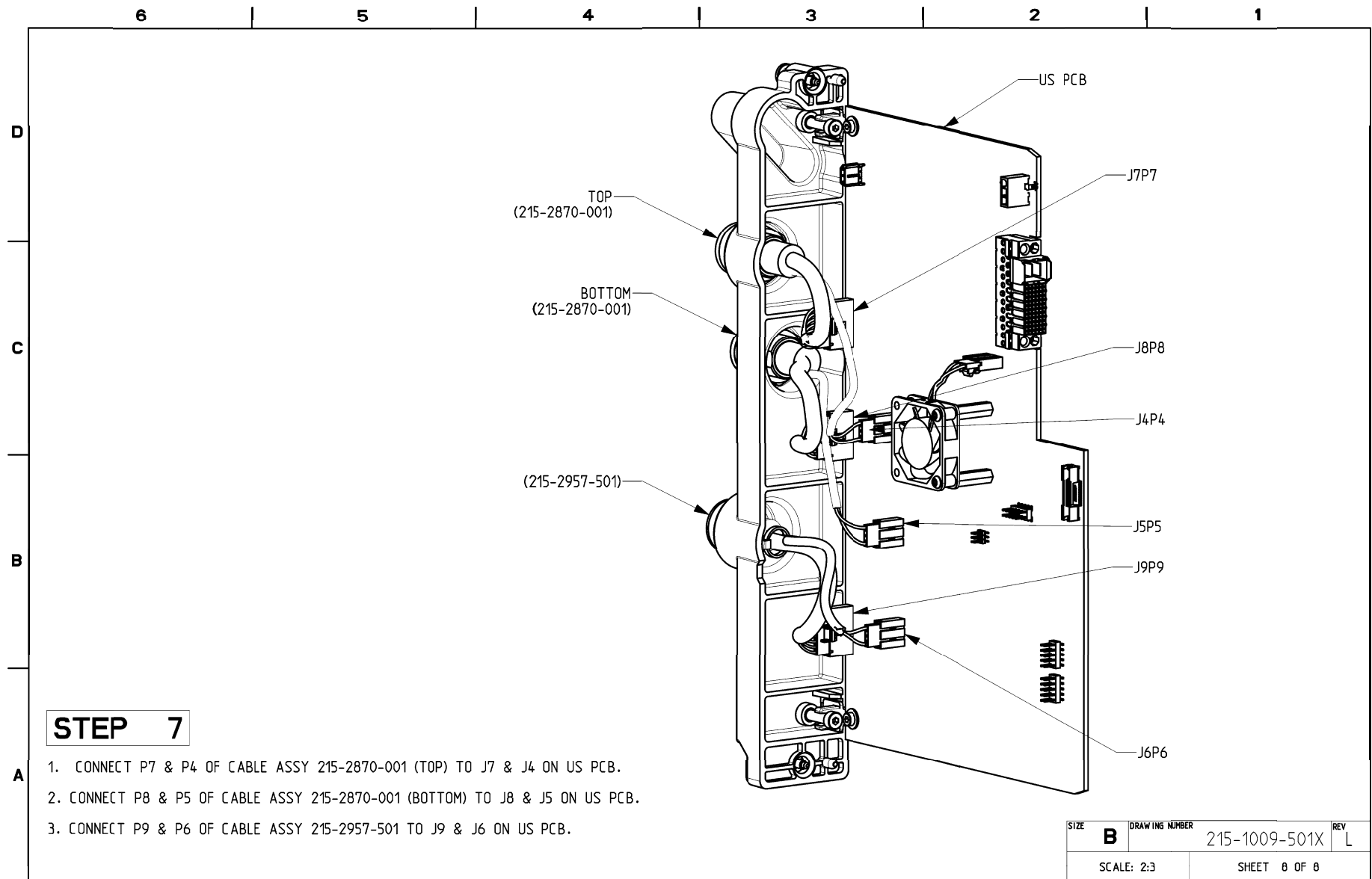
SIZE	B	DRAWING NUMBER	215-1009-501X	REV	L
SCALE: 2:3		SHEET 3 OF 8			

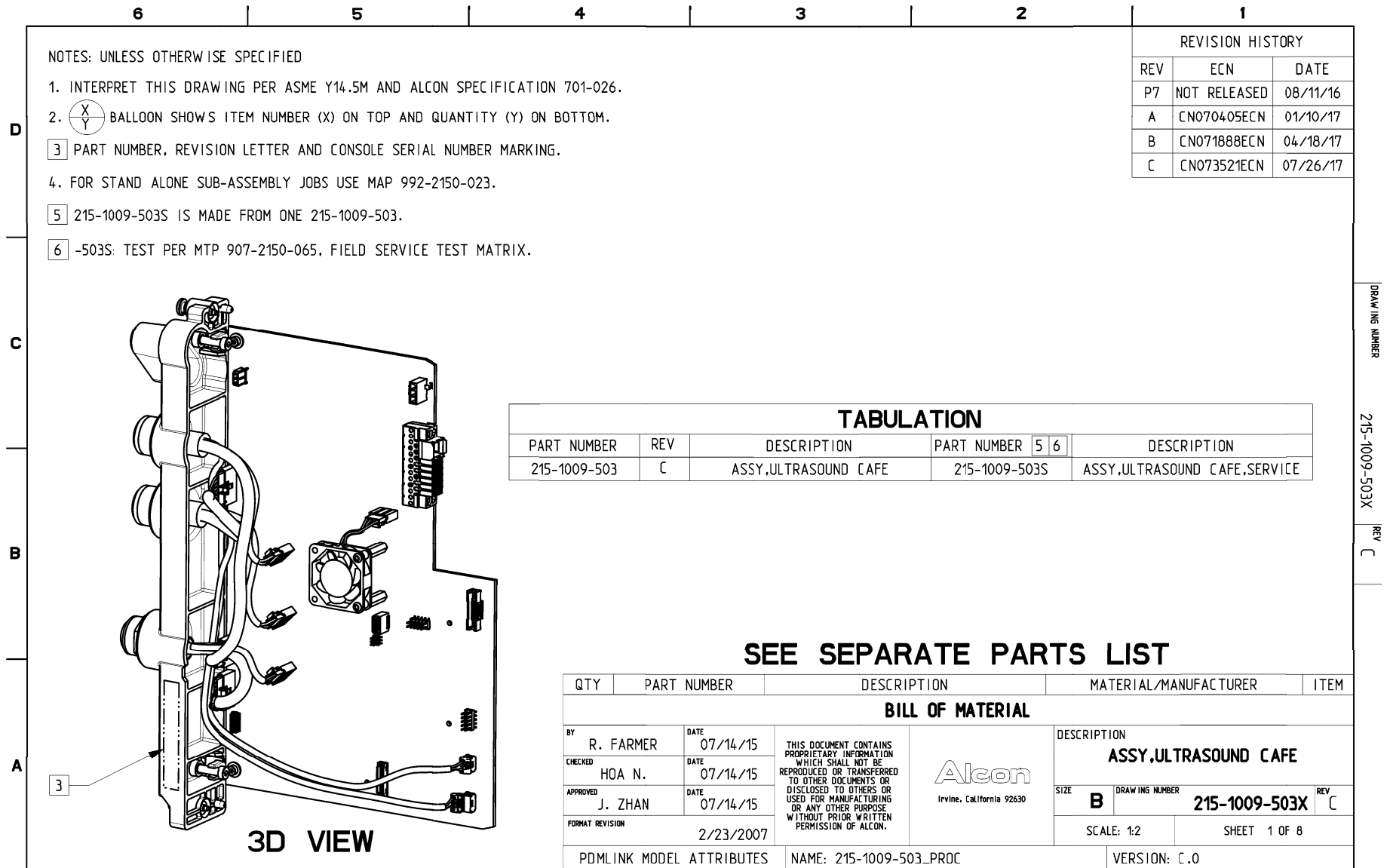








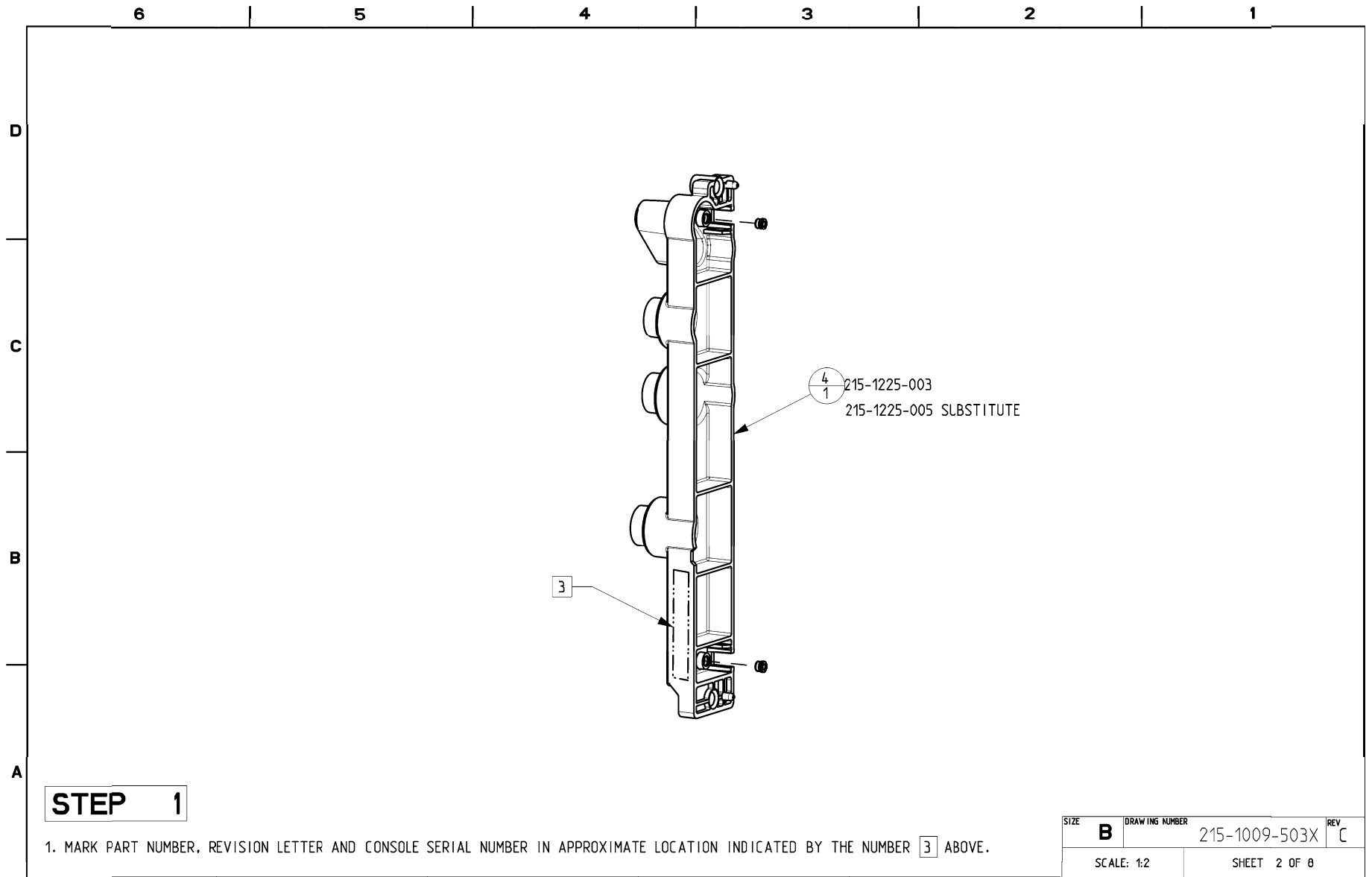


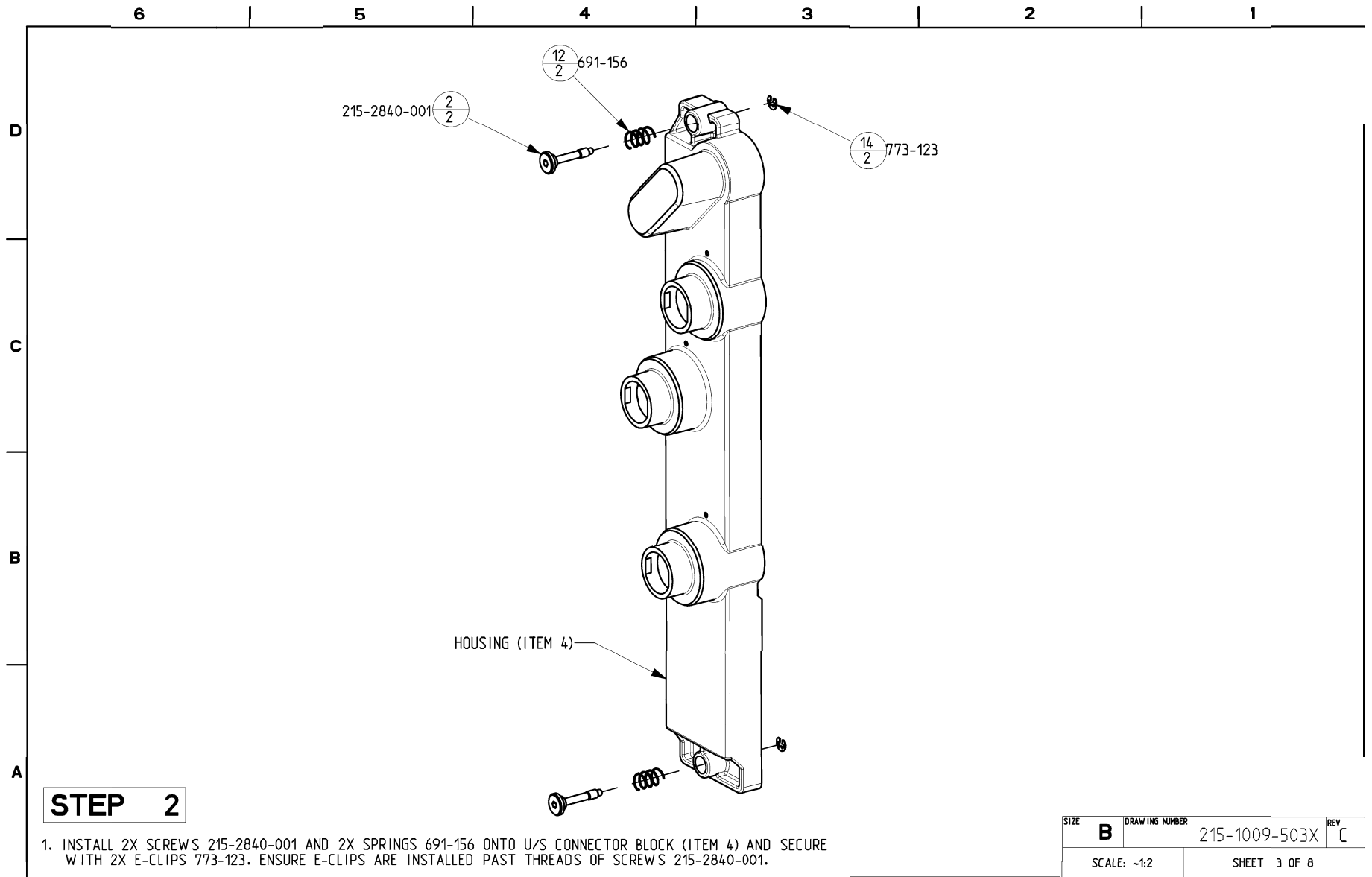


DRAWING NUMBER

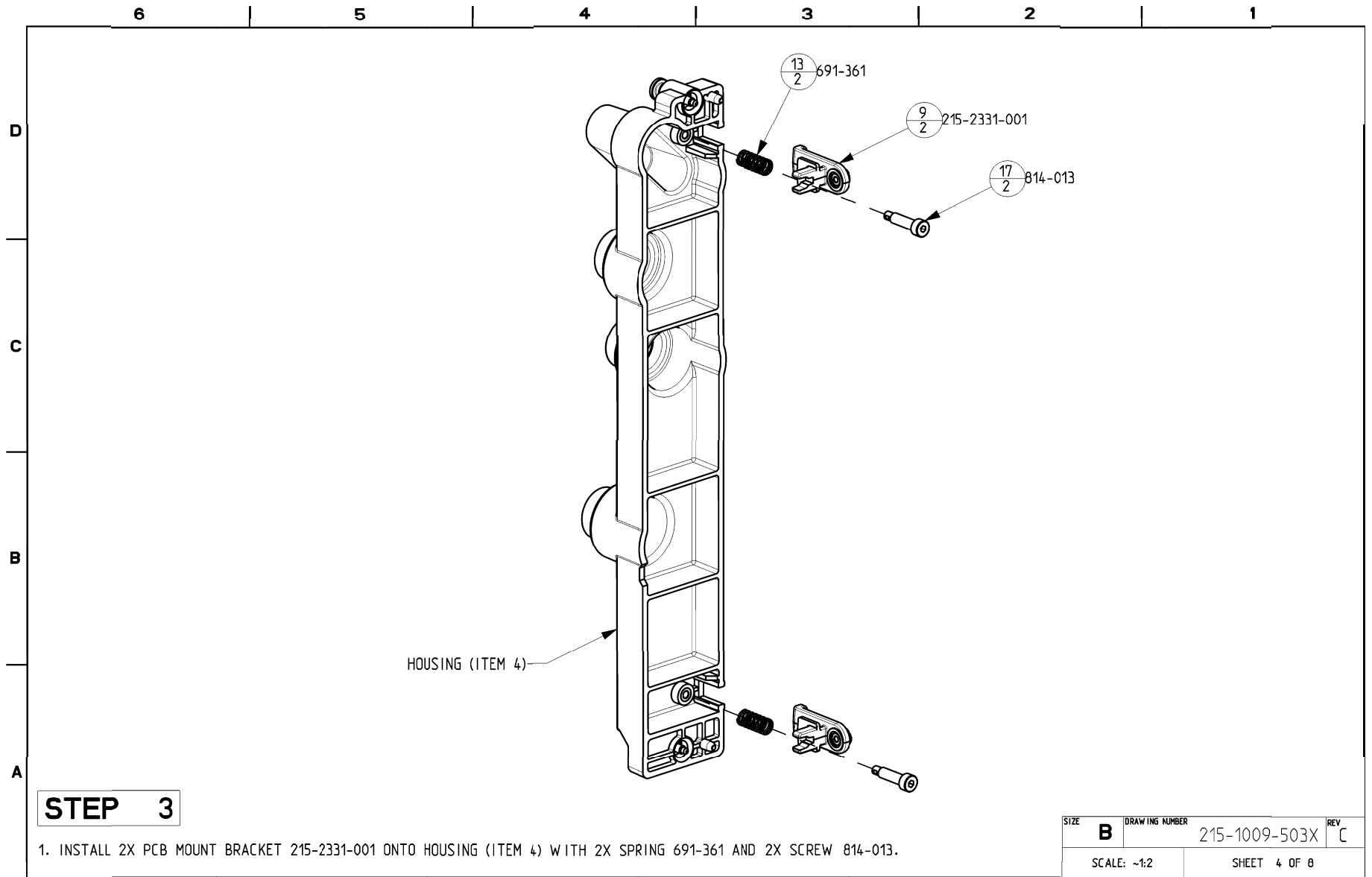
215-1009-503X

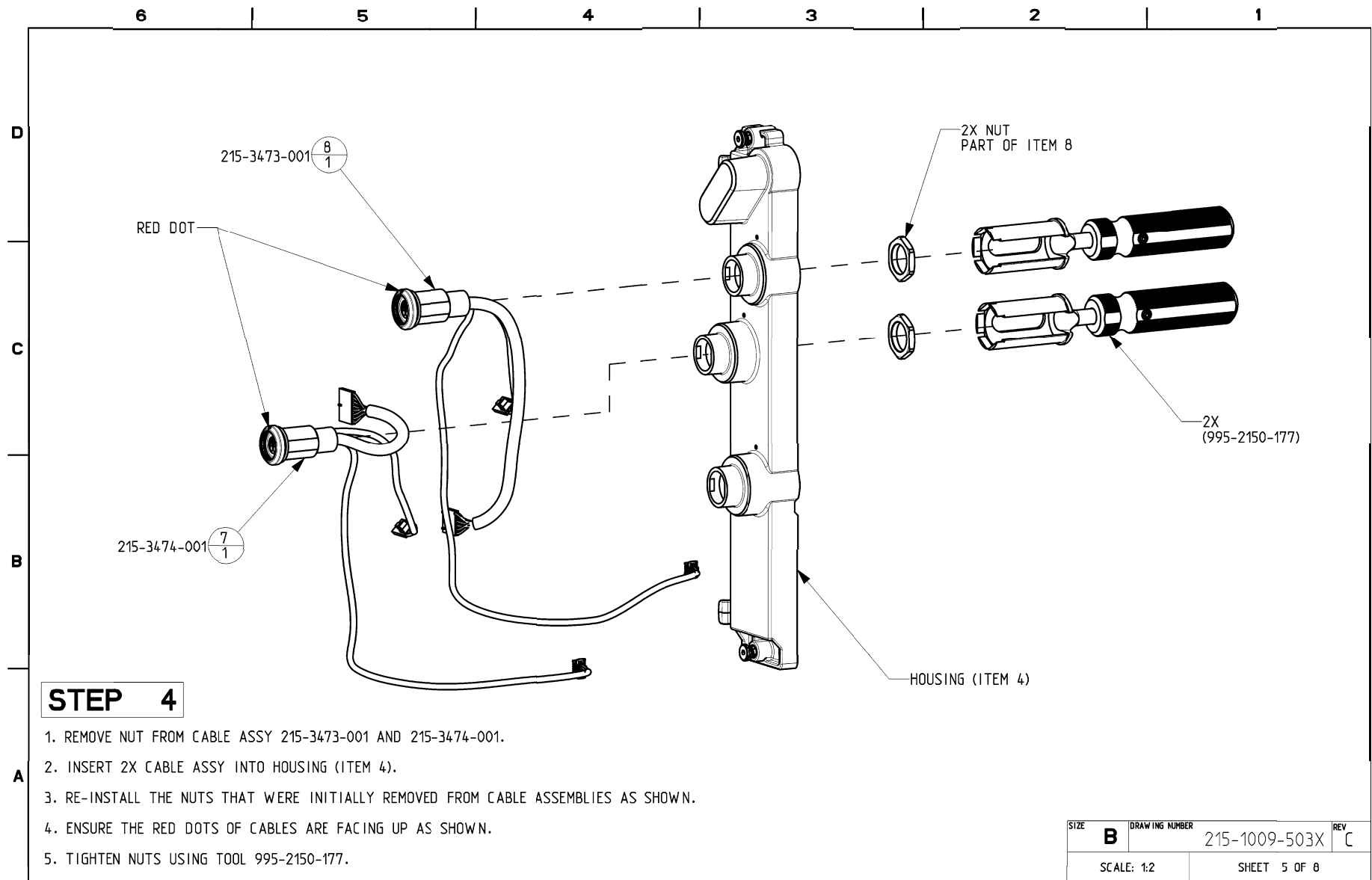
REV C

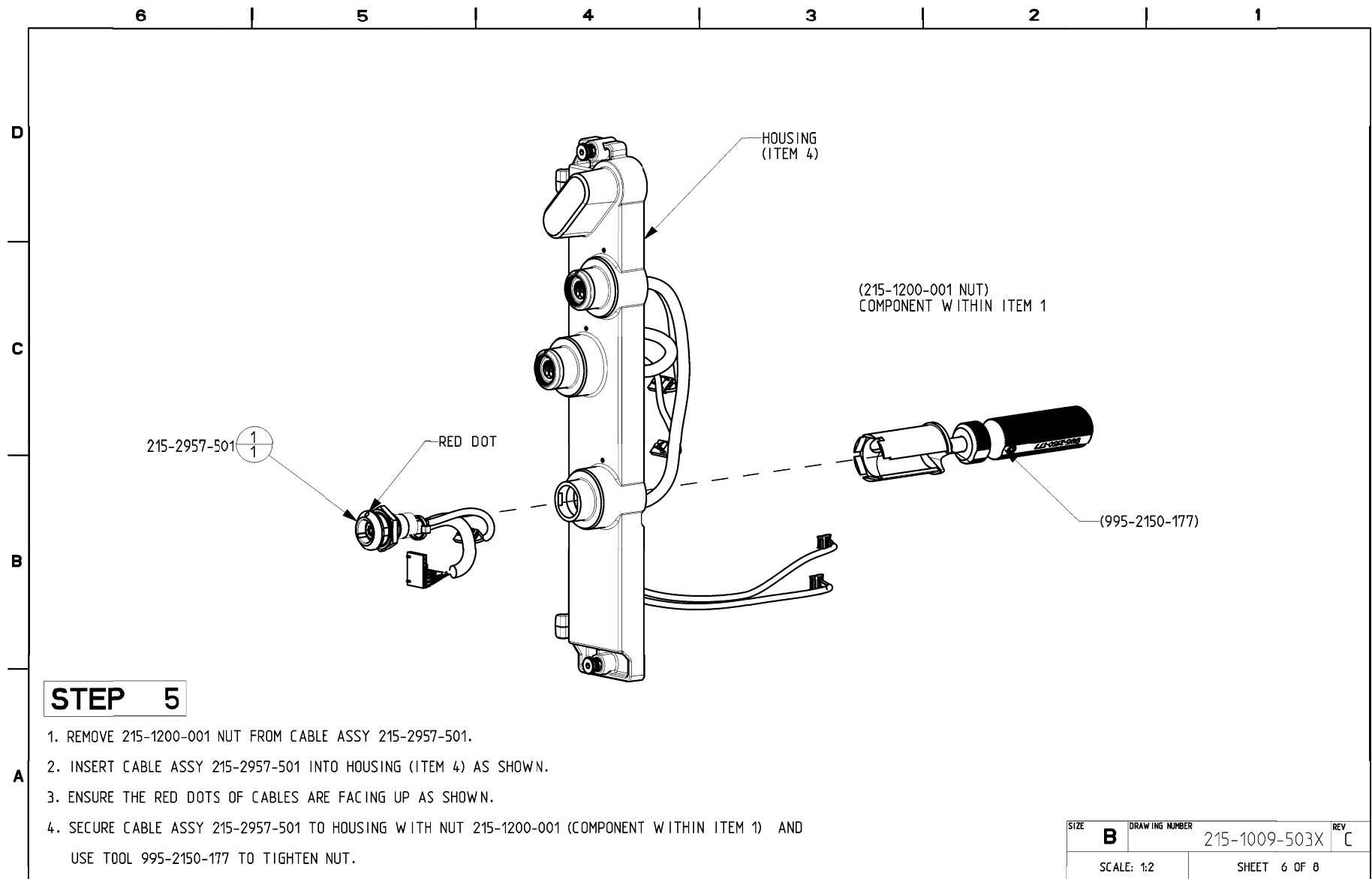


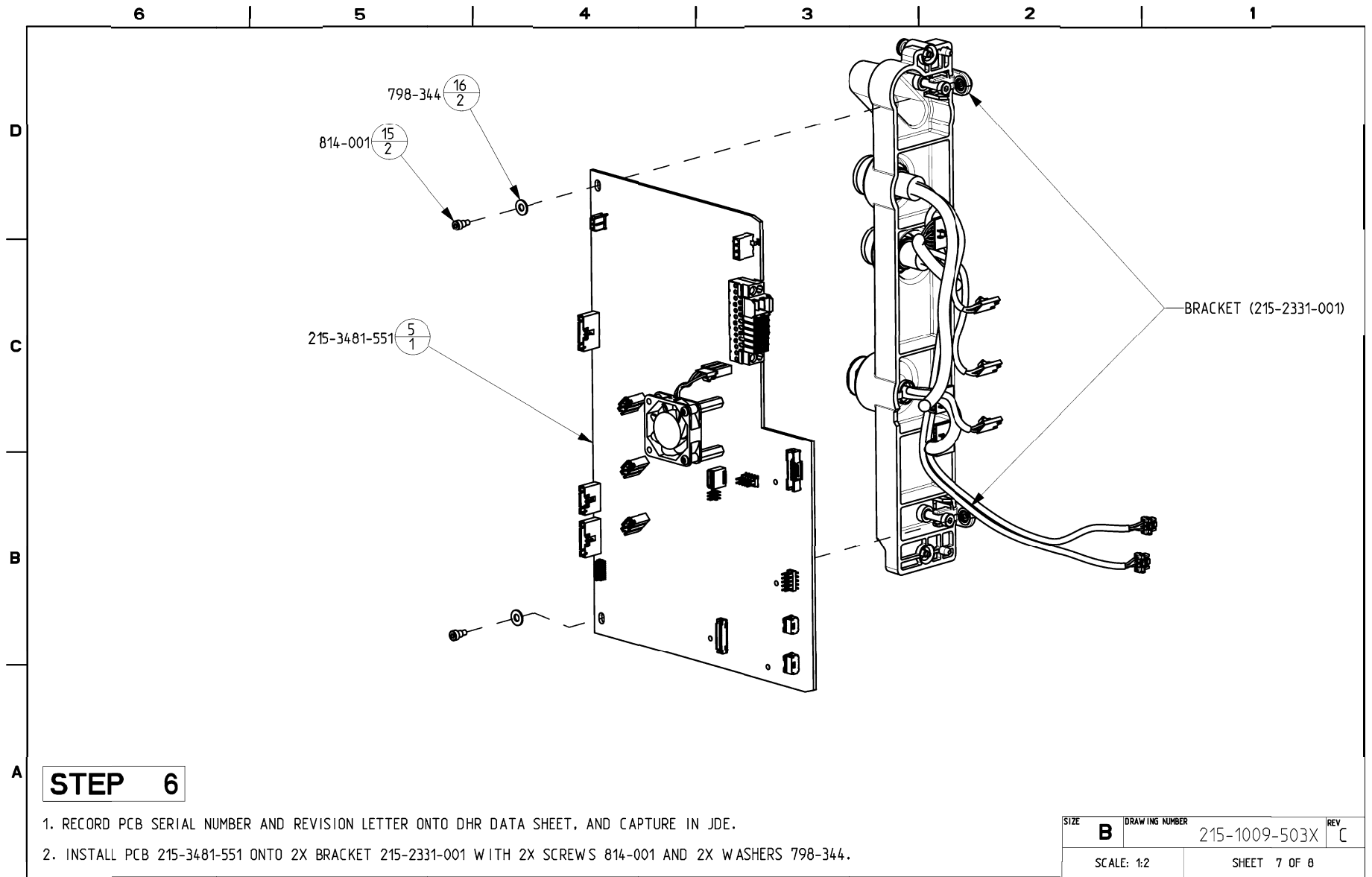


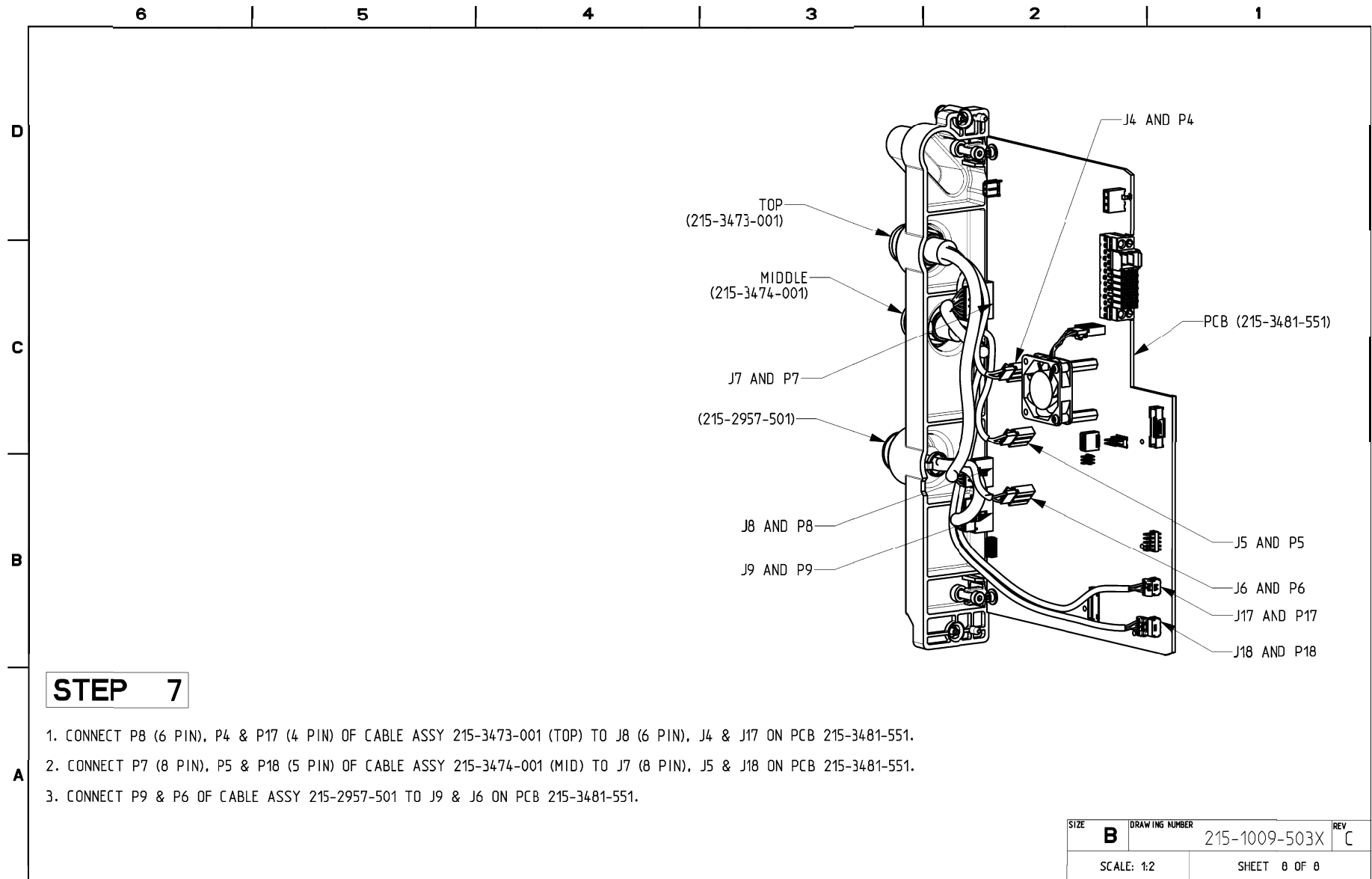
SIZE	B	DRAWING NUMBER	215-1009-503X	REV	C
SCALE: ~1:2		SHEET 3 OF 8			











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SECTION SEVEN - ADDITIONAL INFORMATION

This section is reserved for additional service information that may be required for the system or related accessories.

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